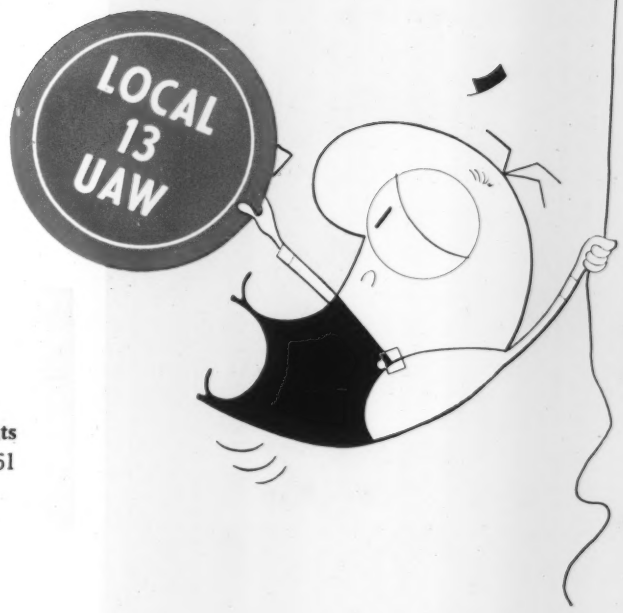
MARCH 24, 1958

STEEL
The Metalworking Weekly

A PENTON PUBLICATION

Whitecollar Unions?

The drive is nearly stalled because of labor scandals, but the big unions will resume full-scale efforts in 1959 and 1960 to organize engineers, technicians, clerical people . . . . . *Page* 65



Inquiries Cheer Partmakers

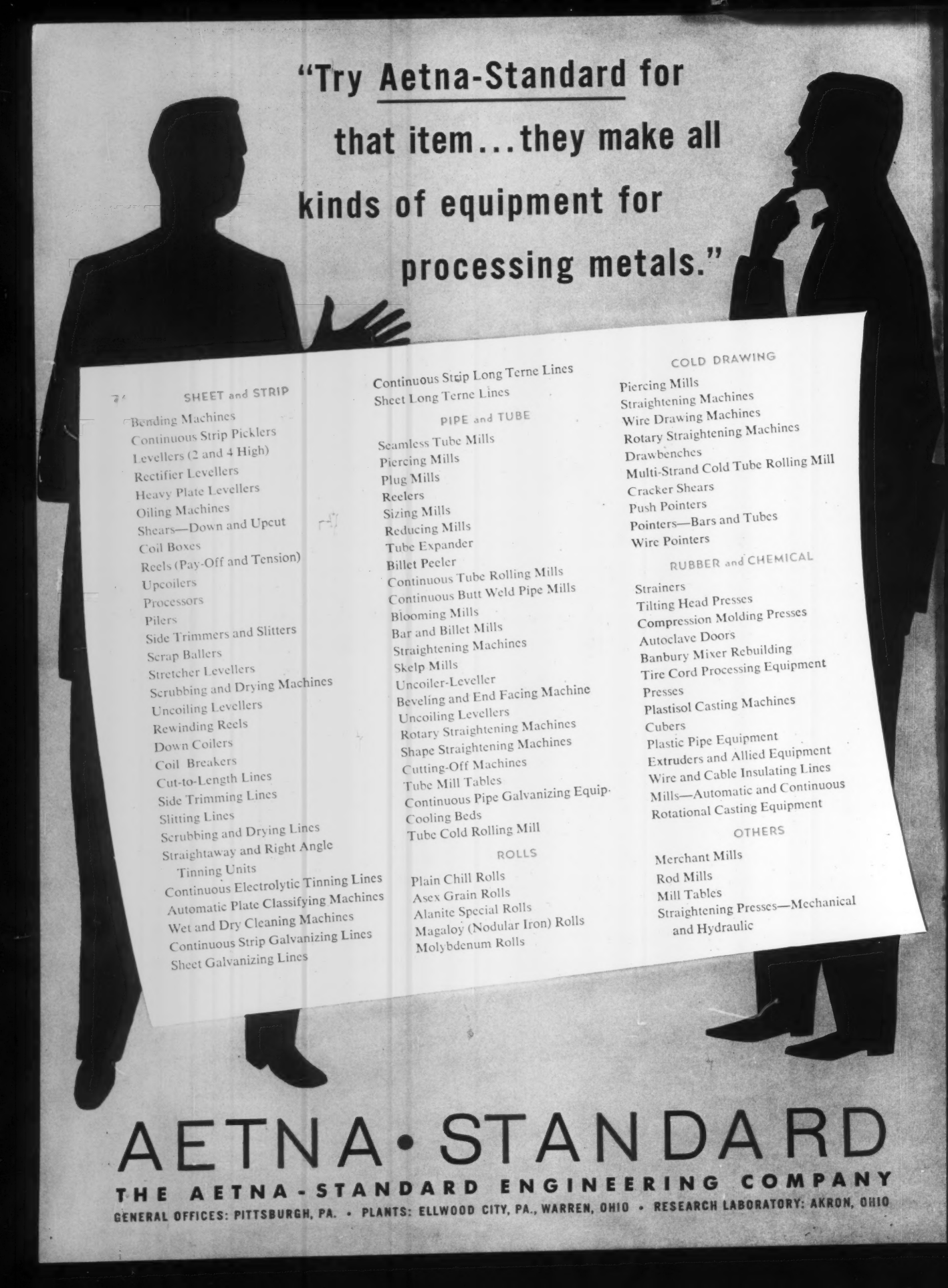
But they're troubled by slipping backlogs, shipments of castings, stampings, other components . . . *Page* 61

Beating the Cost Crisis

Gillette Safety Razor Co. cut 30 per cent off assembly costs with two automatic machines . . . *Page* 104

Electrons Purify Alloys

Melting and casting with a beam of electrons may cut cost of special metals and stimulate use . . . *Page* 108

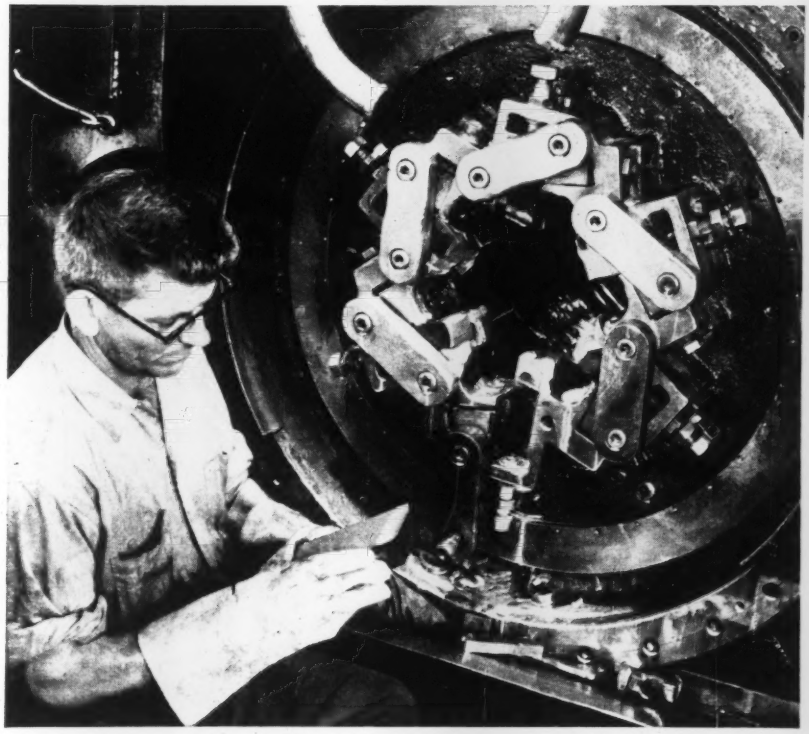

"Try Aetna-Standard for that item...they make all kinds of equipment for processing metals."
SHEET and STRIP
Bending Machines
Continuous Strip Picklers
Levellers (2 and 4 High)
Rectifier Levellers
Heavy Plate Levellers
Oiling Machines
Shears—Down and Upcut
Coil Boxes
Reels (Pay-Off and Tension)
Upcoilers
Processors
Pilers
Side Trimmers and Slitters
Scrap Ballers
Stretcher Levellers
Scrubbing and Drying Machines
Uncoiling Levellers
Rewinding Reels
Down Coilers
Coil Breakers
Cut-to-Length Lines
Side Trimming Lines
Slitting Lines
Scrubbing and Drying Lines
Straightaway and Right Angle Tinning Units
Continuous Electrolytic Tinning Lines
Automatic Plate Classifying Machines
Wet and Dry Cleaning Machines
Continuous Strip Galvanizing Lines
Sheet Galvanizing Lines
Continuous Strip Long Terne Lines
Sheet Long Terne Lines
PIPE and TUBE
Seamless Tube Mills
Piercing Mills
Plug Mills
Reelers
Sizing Mills
Reducing Mills
Tube Expander
Billet Peeler
Continuous Tube Rolling Mills
Continuous Butt Weld Pipe Mills
Blooming Mills
Bar and Billet Mills
Straightening Machines
Skelp Mills
Uncoiler-Leveller
Beveling and End Facing Machine
Uncoiling Levellers
Rotary Straightening Machines
Shape Straightening Machines
Cutting-Off Machines
Tube Mill Tables
Continuous Pipe Galvanizing Equip.
Cooling Beds
Tube Cold Rolling Mill
ROLLS
Plain Chill Rolls
Asex Grain Rolls
Alanite Special Rolls
Magaloy (Nodular Iron) Rolls
Molybdenum Rolls
COLD DRAWING
Piercing Mills
Straightening Machines
Wire Drawing Machines
Rotary Straightening Machines
Drawbenches
Multi-Strand Cold Tube Rolling Mill
Cracker Shears
Push Pointers
Pointers—Bars and Tubes
Wire Pointers
RUBBER and CHEMICAL
Strainers
Tilting Head Presses
Compression Molding Presses
Autoclave Doors
Banbury Mixer Rebuilding
Tire Cord Processing Equipment
Presses
Plastisol Casting Machines
Cubers
Plastic Pipe Equipment
Extruders and Allied Equipment
Wire and Cable Insulating Lines
Mills—Automatic and Continuous
Rotational Casting Equipment
OTHERS
Merchant Mills
Rod Mills
Mill Tables
Straightening Presses—Mechanical and Hydraulic
AETNA • STANDARD
THE AETNA-STANDARD ENGINEERING COMPANY
GENERAL OFFICES: PITTSBURGH, PA. • PLANTS: ELLWOOD CITY, PA., WARREN, OHIO • RESEARCH LABORATORY: AKRON, OHIO

Tool Steel Topics

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation

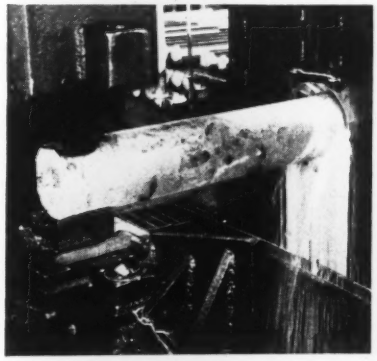
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Export Distributor: Bethlehem Steel Export Corporation



Nickel Billets Get Close Shave with Tools of 66 High-Speed

Biting into billets, castings or forgings of nickel or nickel alloy is one of the toughest assignments ever devised for tool steel. And yet, such jobs are taken in stride with Bethlehem high-speed tool steel at the plant of International Nickel Co., Huntington, W. Va.



Bar peeler cutters, made of 66 High-Speed tool steel, prepare nickel surface for extrusion.

The bar peeler cutters, in the picture above, are hardened to Rockwell C 60-62, and are used in the surface preparation of nickel billets, prior to extrusion. Despite this extremely rugged operation, the cutters are doing an outstanding job, because of their unusual resistance to shock and wear.

66 High-Speed is ideal for all types of cutting applications because of its well-rounded 6-5-4-2 analysis. In addition to its outstanding shock and wear properties, it has excellent red-hardness and abrasion resistance — all the qualities needed for satisfactory high-speed cutting work.

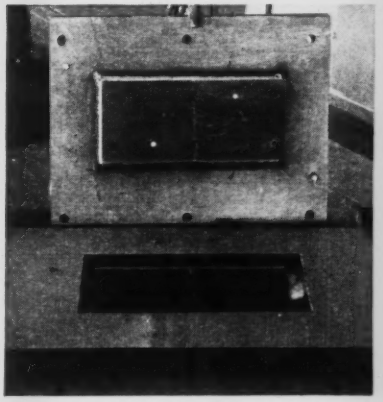
If you would like to learn more about 66 High-Speed, and the many jobs it can handle, simply get in touch with your friendly Bethlehem tool steel distributor.

BETHLEHEM TOOL STEEL ENGINEER SAYS:

Overloading of Machines Shortens Tool Life

Overloading of machine tools is detrimental not only to the machines, but also to the life of the tools. Overloads cause excessive deflection of the constructional members, which may cause misalignment of mating tools and change calculated clearances. This in turn may produce excessive wear on the tools, and may result in defective parts or premature tool breakage.

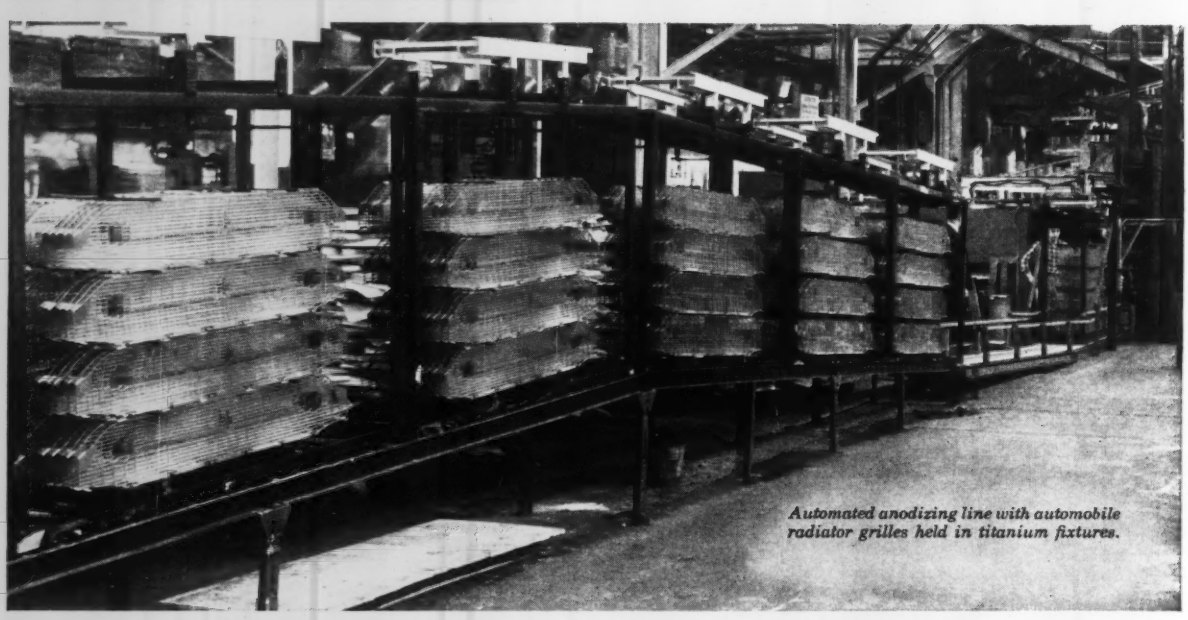
Overloading frequently results from performing an excessive number of operations at one time, such as multiple piercing of holes. Overloads of this type can be prevented without changing the work to be done by providing, (1) shear on either the punch or die to reduce the maximum punching load, or, (2) by staggering punch heights so that the multiple operations are performed in sequence, instead of all at the same time.



UP TO 30,000 CONVEYOR PANELS WITH DIE OF 67 CHISEL

This large blanking die was employed in the production of conveyor panels, made from 14-gage sheet steel. It was hardened to Rockwell C-50, and turned out as many as 30,000 pieces before redressing was required. 67 Chisel is our popular chrome-tungsten type of shock-resisting tool steel. In addition to its use in blanking, it's excellent for hot-work tools, shear blades, and swaging dies. Give it a try.

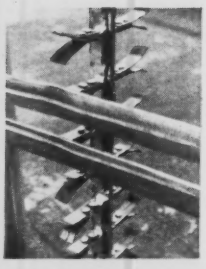
Progress with **TITANIUM**



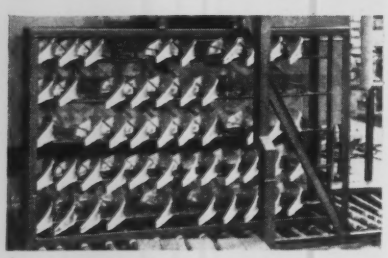
Automated anodizing line with automobile radiator grilles held in titanium fixtures.

TITANIUM LASTS 20 TIMES LONGER

in this anodizing process



Close-up of moldings held in titanium tips on anodizing rack.



Headlight assemblies held in titanium fixtures.

This automatic anodizing line at Reynolds Metals Company, Louisville, Kentucky, handles aluminum automotive parts on a huge scale. Parts such as window frames, grilles, hood moldings and headlight assemblies, are mounted on racks, which are first dipped in a brightener solution (highly concentrated sulfuric and phosphoric acid), then into an electrolytic bath.

What metal should be used to make the racks? Typical rack life at Reynolds was only 6 days on one anodizing line until titanium was tried. Average rack life is now *120 days*.

For economy in construction, the basic racks are made of aluminum, which is rubber coated. The rack tips or holding fixtures, which must be left bare, are made of Mallory-Sharon commercially pure titanium, riveted or welded in place.

Titanium in this mass production operation yields substantial savings, prevents the disruption of constant replacements. Let us help *you* evaluate titanium wherever you have the problem of corrosion. Write for booklet listing titanium corrosion-resistance data.

MALLORY-SHARON

METALS CORPORATION • NILES, OHIO

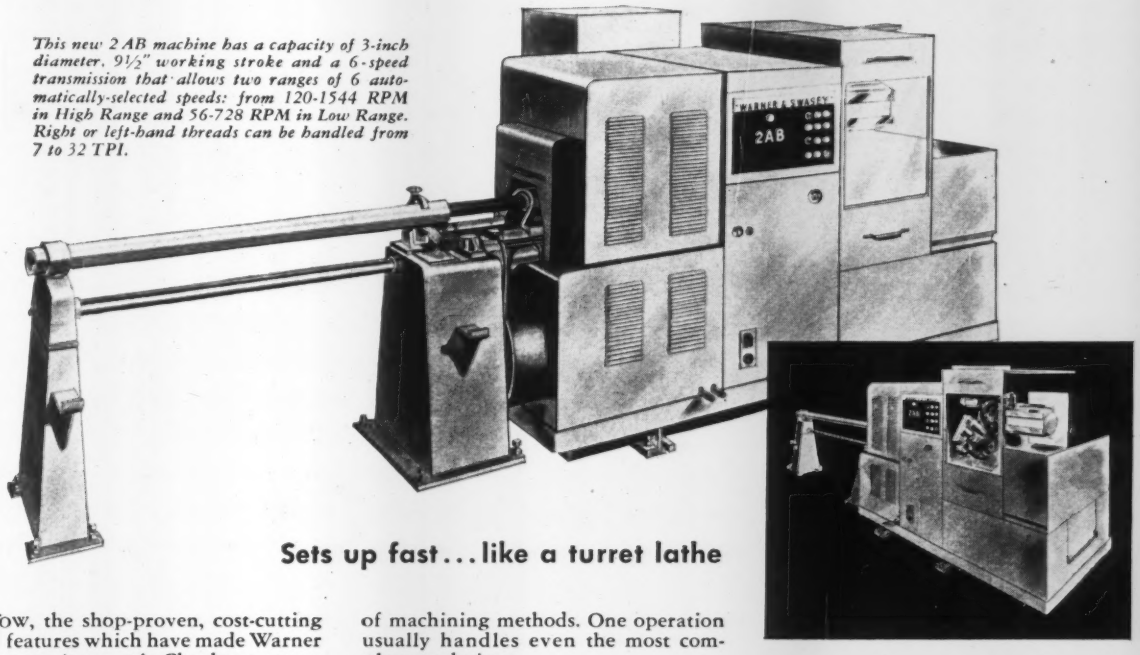
Visit us at Booth 284, Design Show, Chicago, April 14-17.

Integrated producer of Titanium • Zirconium • Special Metals

NEW! Warner & Swasey 2 AB Single Spindle Automatic Bar Machine

... enables profitable small-lot production of even your most complex and precision demanding bar jobs on a fast, automatic basis

This new 2 AB machine has a capacity of 3-inch diameter, 9½" working stroke and a 6-speed transmission that allows two ranges of 6 automatically-selected speeds: from 120-1544 RPM in High Range and 56-728 RPM in Low Range. Right or left-hand threads can be handled from 7 to 32 TPI.



Sets up fast... like a turret lathe

Now, the shop-proven, cost-cutting features which have made Warner & Swasey Automatic Chuckers so outstanding in their field are available in a new Single Spindle Bar Automatic. Most important among the profit- producing features of this new Warner & Swasey 2 AB are:

● **FASTER SETUPS**—With no cams to change, time-consuming set-up procedures, usually encountered with automatic bar machines, are eliminated. Even your smallest lot bar jobs can now be produced economically on an automatic basis.

● **GREATER ACCURACY**—Only two wide—and widely-spaced—bearing surfaces support the turret. Thus, cumulative tolerance problems in conventional "multiple bearing" turret location designs are eliminated.

● **EASIER TOOLING FOR COMPLEX WORK**—Flexibility and accessibility of the 2 AB's cross slides and pentagon turret enable the use of a wide variety of machining methods. One operation usually handles even the most complex workpieces.

● **POWER FOR TOMORROW'S JOBS —TODAY**—The 2 AB's 25 horsepower, reversible motor more than meets today's rugged metal removing requirements and, coupled with a wide range of spindle speeds, permits the efficient application of the latest cutting tool materials.

● **"FREE" CUT-OFF TIME**—An independently-operated cut-off slide allows full utilization of both front and rear cross slides. The cut-off cycle may be started during any one of the pentagon turret stations. Thus, cutoff can be progressing during subsequent machining providing a cut-off cycle which is virtually "free".

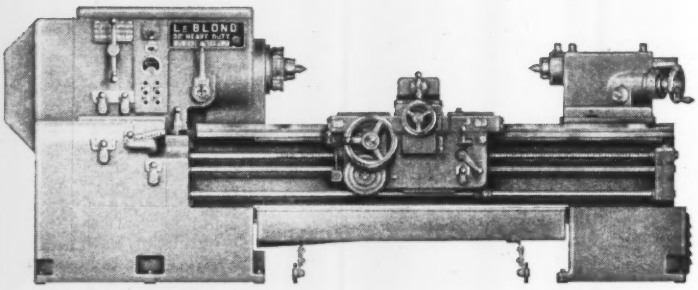
● **AUTOMATIC RESTOCKING INDICATOR**—This ingenious device in the hydraulic bar feed mechanism automatically stops the 2 AB and lights an indicator light on the operator's control panel before the bar being machined runs out—prevents tool damage from improperly-gripped stock.

Why not call your nearest Warner & Swasey Field Representative and get the complete story on the new 2 AB. It can help increase both production and overall profits—so important in today's highly competitive picture.

WARNER & SWASEY
Cleveland
PRECISION MACHINERY SINCE 1880

NO MATTER WHICH WAY YOU TURN...WARNER & SWASEY CUTS COSTS

THE RIGIDEST LATHES IN EVERY CLASS YOU'LL FIND IN THE LINE OF



This is the LeBlond 20" heavy duty lathe. Basically a 40 HP machine, it was modified to test tools for tomorrow—150 HP at speeds in excess of 10,000 sfm. The basic rigidity was there all the time—the margin of engineering excellence that is traditionally LeBlond. Write for your LeBlond Complete Line Catalog No. C-58.

LEBLOND

THE R. K. LEBLOND
MACHINE TOOL CO.
CINCINNATI 8, OHIO

World's Largest Builder of A Complete Line of Lathes for More Than 71 Years

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The Metalworking Weekly

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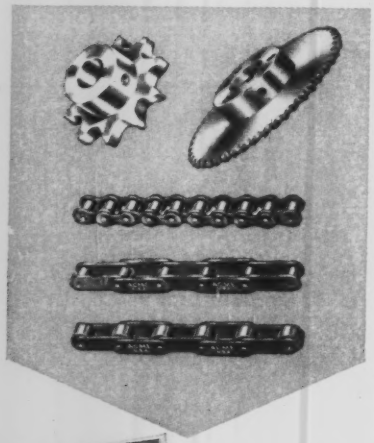
★ You get quick, close-by advice and service.
★ Saves on other paper work, such as extra requisitions, etc.
★ Saves on correspondence.
★ Simplifies purchasing.



Write Dept.10-T for new 100-page Illustrated Catalog, including new engineering section showing diagrams of 36 methods of chain driving.

Acme Chain Corporation
HOLYOKE MASSACHUSETTS

behind the scenes

Usership in Action

Two years ago, STEEL's Promotion Director Sal Marino assumed the posture of a naked gentleman made famous by a French sculptor named Rodin and began thinking. Right elbow propped on left knee—or left elbow on right knee? Maybe it was the left knee propped on the right elbow; oh, well, it doesn't make any difference. The point is, Sal thought furiously, and came up with an idea which he called "USERSHIP," something that is a step beyond readership. "Folks who read STEEL," Sal explained, "find the material useful. They can use it in their business."

The direct mail campaign that he instigated to advertise this idea to the ends of the metalworking earth found much favor in many quarters. Indeed, the Direct Mail Advertising Association was so impressed by the idea and the presentation thereof it was moved to award Mr. Marino a prize.

This preamble is necessary because it may help explain a remark dropped by Associate Editor Robert Jaynes. "If you are looking for items of interest," began the remark he dropped, "I have a hot one here on usership. Do you remember an article we ran on investment casting a few weeks ago?" (Investment Castings Go Civilian, STEEL, Mar. 3, p. 95).

We admitted having read it and noted with some astonishment that Mr. Jaynes was growing visibly agitated. "Well, sir," he cried sharply, "as a direct result of that story, a man came in from Pennsylvania looking for more information, and another man from Sandusky, Ohio, called up a Cleveland investment casting company and asked—"

"For information about investment castings?"

"How did you know?"

"Just a wild guess. Of course, he could have asked about the price of a couple of blast furnaces because we know a man in Sandusky who likes to add to his store of astounding information. His name is Ralph, and he calls up everybody. Was it Ralph who called you?"

"Certainly not. I mention these calls to suggest that here was USERSHIP in action."

Mr. Jaynes was right. Maybe Mr. Marino can add this to his store of astounding information, and use it in his next direct mail campaign.

Helpful Report

As you browse or bound through this issue (depending on how carefully you hoard your time) be sure to stop at Page 61 and brief yourself on the component situation. (Outlook for Components, a staff report.) Components are parts that go into other things, and include castings, stampings, drawings, gears, small motors, diecastings, and investment castings. Manufacturers, sellers, and users of components are naturally much interested in the outlook for those items, and STEEL has assembled the report for their particular attention. Next week, the editors will present for your continuing attention a report on the outlook for capital equipment—such as machine tools, cranes, and industrial heating equipment.

Yours Truly

A rush of conscience has stirred us to make some mention of the amiable and delightful persons who go to the trouble of writing letters to this department. It's a pleasure to receive this response. Gosh, when you print stuff, and don't hear nuttin', you get the feeling that you are operating in a vacuum, or talking to yourself. So hello and thank you to Wesley C. Cropper, manager of advertising and technical service, American Steel Band Co., Pittsburgh; Jim Wilkes, Mexico Refractories Co., Mexico, Mo.; Robert H. McGrath, assistant vice president, National Machine Tool Builders' Association, Cleveland; Robert H. Ridgeway Jr., Downers Grove, Ill.; D. G. Hill, Needham, Mass.; E. J. R. Schaefer, International Business Machines, Poughkeepsie, N. Y.; R. D. Sulzer, design engineer, General Electric Co., Ft. Wayne, Ind.; Mrs. B. Cameron, Steel Co. of Canada Ltd., Hamilton, Ont.; Homer Eggers, Hubbell Metals Inc., Indianapolis; T. P. Goodman, Atlantic Steel Co., Atlanta; Elaine M. Bertison and G. F. Weber, Mercury Div., Ford Motor Co., Dearborn, Mich.; and, of course, the inevitable Charlsie and her associates at General Steel Casting, Granite City, Ill.

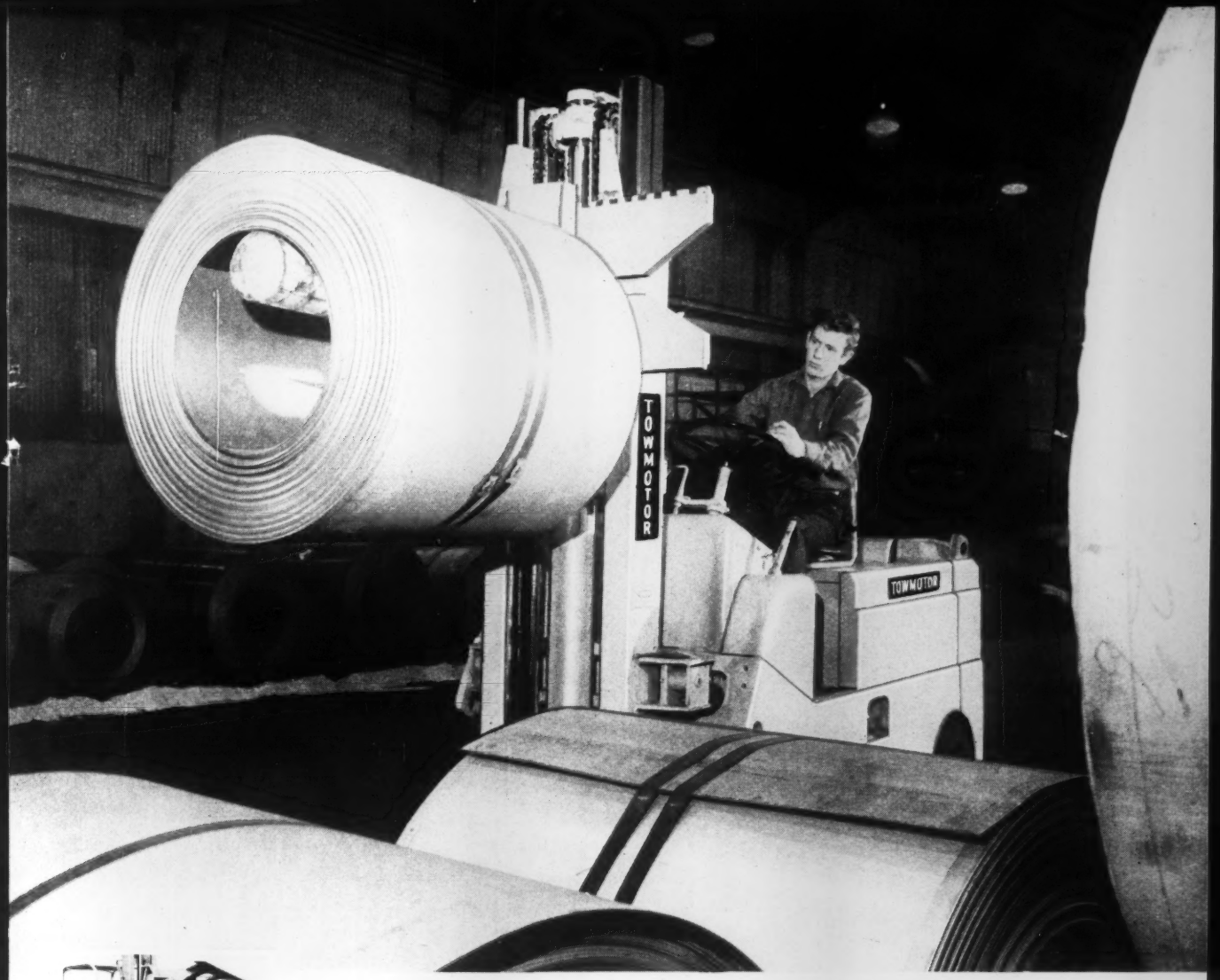
What Price a Tub of Hooch?

"This here round tub is full of moonshine," said the proud father, "but I don't know what it should fetch at $4.50 a gallon, because I don't know how much the tub holds." His daughter, who had gone to Vassar, measured the tub. "Hmm-m. Bottom diameter, 14 in. Top diameter, 21 in. Depth of tub, 6 in. Tub is completely full, too." Making like an IBM, she cocked her head, rolled her eyes, and made some low mumbling sounds. "Paw," said she, "you got exactly $---- worth of prime stuff."

Unless you are a Vassar girl, you'll have to figure this one on paper . . . so, how much would the contents of Paw's tub fetch?

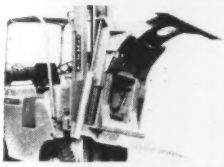
Shrdlu

(Metalworking Outlook—Page 55)

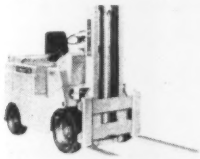


Today's industries need Towmotor Continuous Operation

New Towmotor **"Constant-Power"** Lift Raises Productivity-and Profits



Towmotor Standard Accessories that grab, scoop, push-and-pull, ram, revolve and even shift sideways, offer versatility that saves manhours and dollars daily.



"Pace-Maker" Series Model 540 is typical of new fork lift trucks in the combined Towmotor-Gerlinger line. Load capacities from 1500 to 40,000 pounds.

Driving Ease More Than Tripled with new Towmotor power steering! TowmoTorque Drive adds cushioned "creep" control unequalled in the industry today.

It's easy to see how Towmotor fork lift trucks built a reputation for modern mass-handling efficiency.

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With Towmotor fork lift trucks more work gets done with less fatigue. Motion-saving centralized control—cushioned-comfort seating—dual entry compartment—high free lift—are other standard features that give you convincing reasons for buying modern Towmotor-Gerlinger equipment.

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THE ONE-MAN-GANG

Gerlinger Carrier Co. is a subsidiary of Towmotor Corporation, Cleveland 10, Ohio

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☐ Send free Certified Job Studies relating to our business, which is

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Company_____

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Can Take it!

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Bishop Stainless Steel and Nickel Alloy Aircraft Grade Tubing excels in performance and endurance, and when required meets the rigid ASM, ASTM, MIL-T and AN-WW-T specifications.

You, too, can *specify* BISHOP TUBING on your next order.

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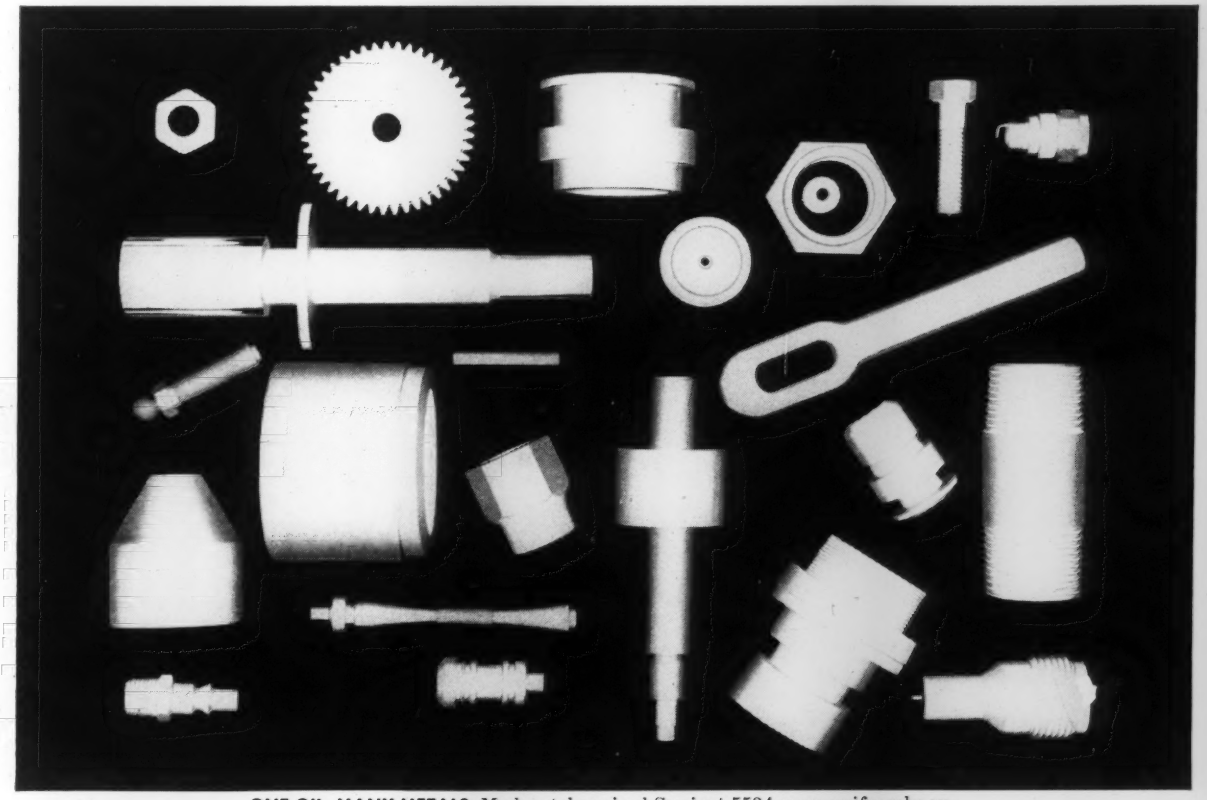
Photograph of F-102A Interceptor Courtesy CONVAIR, a division of General Dynamics Corp., San Diego, California.



ONE OIL, MANY METALS. Moderately priced Sunicut 5534 gave uniformly excellent results in the machining of this wide variety of top-quality steel parts.

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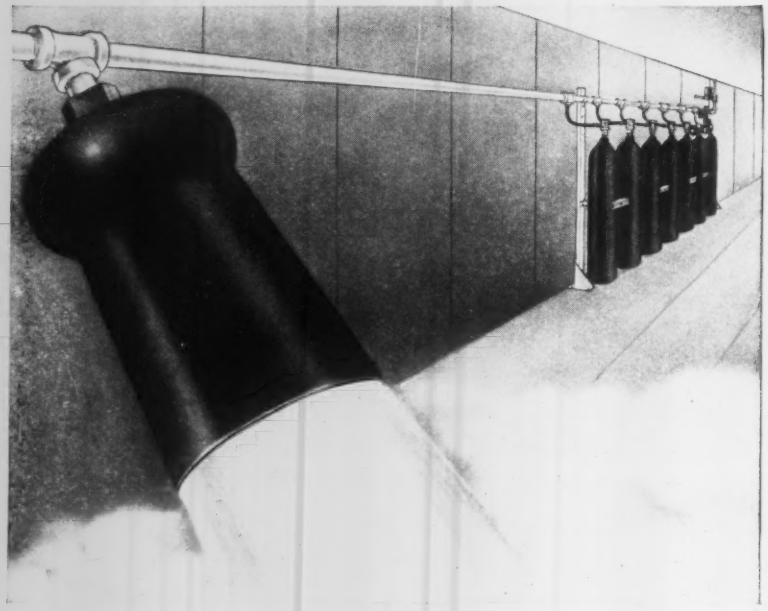

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For more information on Kidde systems, and how they can protect your plant from fire, send the coupon or write today for Kidde's Engineered Fire Equipment Booklet.

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Please send me your Engineered Fire Equipment Booklet, I-19 and complete information on Kidde systems. I am interested in protecting the following hazards:

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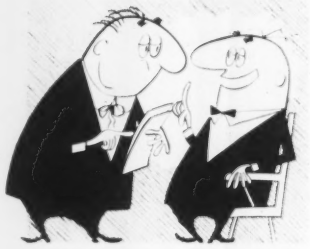
CITY STATE

LETTERS TO THE EDITORS

Pro and Con on Editorial



As part of an industry being seriously injured by excessive imports, it was heartening to read your editorial, "What Price Free Trade?" (Feb. 17, Page 71).

As midwest regional chairman of the Nationwide Committee of Industry, Agriculture & Labor on Import-Export Policy, I am in the forefront of the struggle for more realistic protection for American industry in the legislation now being considered. I am sure that the more than 50 industries interested in our committee join me in thanking you for your help with the forthright, courageous position you have assumed.

I know that the steel industry is being affected by imports of steel products and am convinced that the indirect effects of excessive imports on the 50 industries mentioned above are a considerable factor in the present depressed condition of steelmaking.

W. F. Stoeffhaas
Vice President and General Manager
Arnold, Schwinn & Co.
Chicago

• • •

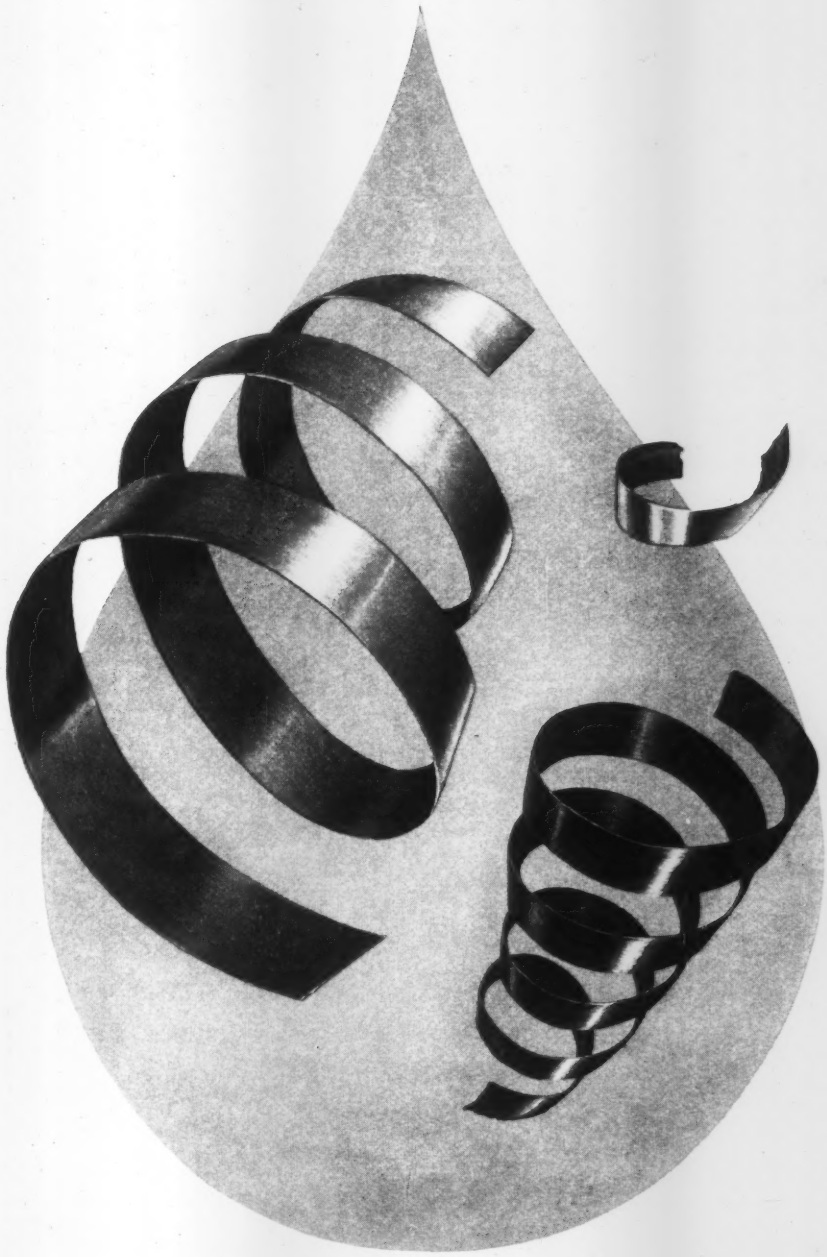
Your editorial, "What Price Free Trade?" (Feb. 17, Page 71), makes distressing reading. I am in the perhaps somewhat unique position of being in all three types of business—export, import, and domestic manufacturing. Thus, I have had opportunity to look at all sides of the picture.

Your example of the sewing machine company may be correct, but my information is that . . . they failed to develop their product along with competition and to give the consumer something that he would buy. Singer Sewing Machine Co., in the same business, is doing all right and has done so for years—competing with all comers and maintaining a nice export business.

The example of machine tool builders, etc., won't hold water, either. The U. S. is exporting more machinery than is being imported. Germany buys two and one-half times as much machinery from the U. S. as it sells to us. Germany charges no duty on metalworking machinery, but we do. So who is getting hurt?

The idea that large American companies

(Please turn to Page 12)



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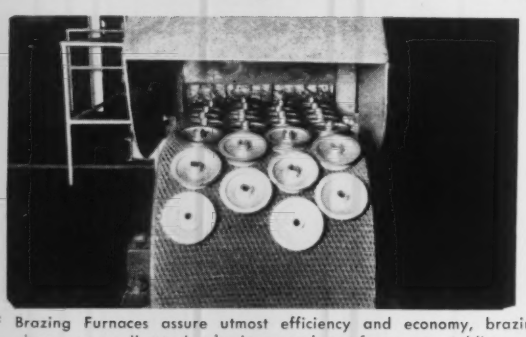
Brazing FURNACES

cut material, tooling and finishing costs

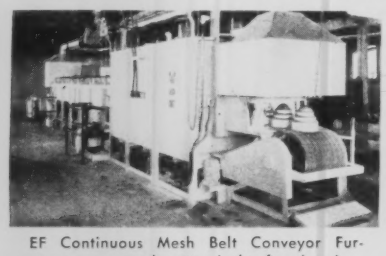


EF Brazing Furnaces assure utmost efficiency and economy, brazing large or small, steel, aluminum and non-ferrous assemblies.

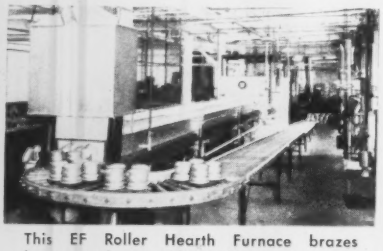
When it's costly to make a part in one piece — make it from several pieces, brazed together. Brazing can save from 50% to 80% in material costs. The brazed piece will probably weigh less — be stronger — withstand shock and vibration better, and wear longer.

Brazing enables you to avoid costly die and tooling charges — and since the finished pieces are discharged from the furnace uniformly bright, smooth and free from scale — plating, lacquering, painting or other finishing costs are greatly reduced.

For best results, let EF engineers, with their wide experience, work with you on your next brazing job. Descriptive folders including many suggested "do's" and "don'ts" sent promptly on request.



EF Continuous Mesh Belt Conveyor Furnaces are used extensively for brazing, bright annealing, drawing and other heat processing. The material is loaded directly on the woven wire belt, uniformly processed and discharged automatically.



This EF Roller Hearth Furnace brazes large steel assemblies which emerge as integral units—scale-free, bright, and undistorted—ready for use. Similar furnaces handle brass, aluminum, copper and other ferrous and non-ferrous products.

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BULLETIN No. 461

shows typical installations of EF Gas-fired, Oil-fired and Electric Furnaces.

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LETTERS

(Concluded from Page 10)

with manufacturing subsidiaries abroad are going to play hob with the home economy by shipping great amounts of cheaply made products into the U. S. market is rather farfetched. Surely those companies aren't going to let their own subsidiaries do them any harm.

American manufacturers who have something special to offer to the world are still enjoying a fine export business. It is the marginal manufacturer who is being crowded out of the export market.

I am afraid that we as Americans will run the Western political and economic alliance into the ground if we fail to see the forest for the trees and to maintain an over-all view rather than being sidetracked by individual problems and difficulties. The "special interests" who make for pork barrel spending hardly need to be reminded of the side on which their bread is buttered. They know, and they will be at the hearings in full cry, with or without an editorial.

Kurt Orban

34 Exchange Place
Jersey City, N. J.

• *In answer to these letters, we do not believe that trade can all be in one direction. If we expect to sell abroad, we also need to buy abroad. We need to encourage a free flow of trade, yet not weaken our industrial base here at home in case we need it in another emergency.*

Article Is Tops

I always enjoy your articles, but the first in your 1958 Program for Management series, "Balance Your Management" (Feb. 17, Page 113) was really tops.

G. D. Boesch

Supervisor, Industrial Relations
Convair
Division of General Dynamics Corp.
Ft. Worth, Tex.

Aid to Cost Reduction Talks

Your articles, "The Cost Crisis: How To Beat It" (Feb. 3, Page 103), and "So You Want To Cut Costs" (Mar. 14, 1955, Page 93), have been helpful in determining areas and methods of cost reduction. Many times the question of new tools and equipment becomes a part of the discussions on cost reduction.

John Zakanycz

Manufacturing Staff
Worthington Corp.
Harrison, N. J.

Management Series Is a 'Must'

Information in your yearly Program for Management series is a must for progressive management-minded people. I am including your 1954, 1955, 1956, and 1957 management articles in a reference folder of topnotch, thought-provoking business articles for the use of personnel in our district office.

Robert M. Sydow

Youngstown Sheet & Tube Co.
St. Louis

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. . . 4 Major Features Increase Efficiency

1. WIDE RANGE—Just three LANDIS Pipe Machines (2", 8" and 18") will thread all diameters of pipe from ½" to 18". Each machine is constructed so as to handle a wide range of pipe sizes—for example, the 6" machine will thread all diameters from 1" to 6". Universal size adjustment allows quick set-up.

2. DIE HEAD EFFICIENCY—The design of Stationary heads provides maximum rigidity on all diameters within their range. Positive locking action is assured through a self-locking toggle joint. Size adjustment is quickly and easily obtained through the use of a single locking nut.

3. LOW TOOL COST—Chasers operate at a tangent to the work. Line contact at cutting edge reduces friction. Permanent throat assures even chip distribution. Variable rake affords proper cutting edge for different materials. Landis chasers are useable for 80% of their original length. They are individually replaceable and, within the range of a given die head, a single set can be used for all diameters of the same pitch, form and taper.

4. PRECISION TAPERED THREADS—The Receding Chaser Pipe Machines are especially designed to cut tapered threads to meet A.P.I. requirements. Chasers recede into the die head at a rate equal to the taper of the thread, ensuring accurate and uniform taper along the full thread length.

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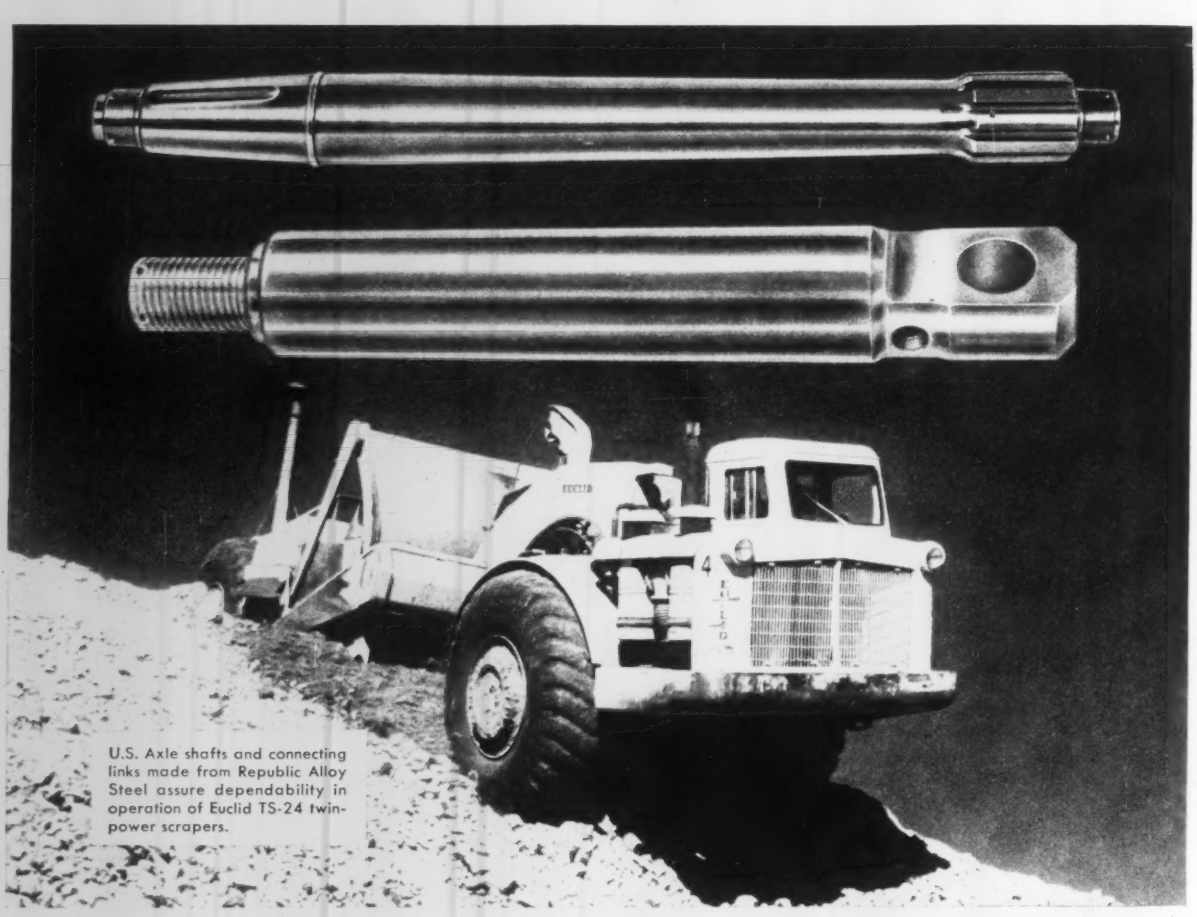


U.S. Axle shafts and connecting links made from Republic Alloy Steel assure dependability in operation of Euclid TS-24 twin-power scrapers.

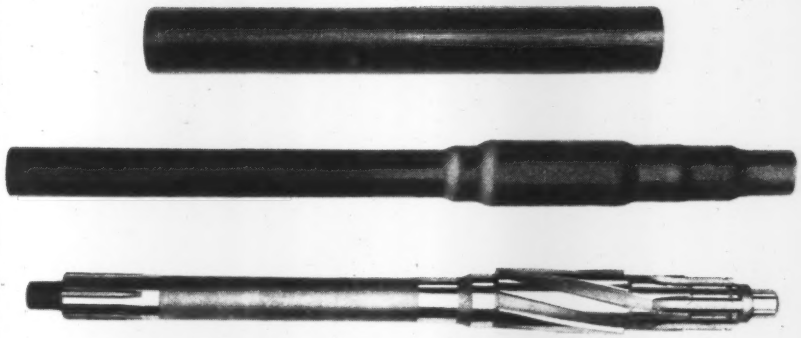
REPUBLIC ALLOY STEELS ADD DEPENDABILITY, TOUGHNESS, STRENGTH, QUALITY TO A PRESTIGE PRODUCT. Axle shafts and connecting links produced by The U.S. Axle Company, Inc., Pottstown, Pennsylvania, are known throughout the world for their extra stamina to withstand emergencies as well as everyday use.

To maintain their reputation for quality and dependability, U.S. Axle specifies only the finest materials, including Republic 4300 series hot rolled Alloy Steels.

These finest of steels provide the high strength, toughness, shock-resistance, and abrasion-resistance values needed to withstand the severe service to which the shafts and links are subjected. Alloy Steel's uniform response to heat treatment gives these parts hard surfaces around tough cores, providing maximum resistance to abrasion, friction, and wear.

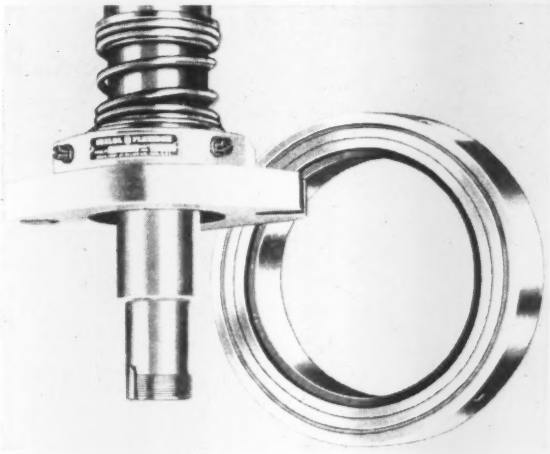
In Republic Alloy Steels you will find the highest strength values—plus an exceptionally high strength-to-weight ratio that permits the design of thinner sections to save weight and hold down size without any sacrifice of needed strength.

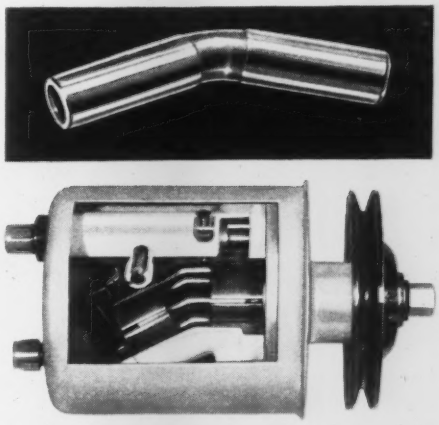
Specify Republic Alloy Steels to insure safety, to extend equipment life, to cut maintenance and replacement costs. Specify Republic Alloy Steels where strength and toughness must resist heavy-duty roughness. We offer you the services of our experienced field metallurgists to help you get the most from these versatile steels at the lowest possible cost. The coupon is your invitation to their services.



REPUBLIC DIE-FORM MEANS ECONOMY. This new fabricating process can save you 1 out of 3 tons of steel. The automotive transmission shaft, shown at left, proves the point. Using Die-Form, 200 tons of cold finished blanks produced parts formerly requiring 300 tons. Die-Form is a new method of cold forming hot rolled carbon, alloy, or stainless steel bars into multi-diameter blanks ready for final machining. It permits major savings in time, material, and money in mass produced, multi-diameter machine shafts. Since Die-Form closely approximates the final part, only finishing cuts and/or grinding are required for completion. Scrap loss is minimized—production rate increased. Send coupon for booklet describing the advantages of this new process.

REPUBLIC ENDURO® STAINLESS STEEL BARS provide a machine finish that looks as good as a ground finish. That's the performance report from machine operators at Sealol Corporation, Providence, Rhode Island. The company uses Free-Machining ENDURO bars in manufacturing mechanical shaft seals for application on fuel tankers, and in the aircraft, petroleum, food and chemical industries. The Sealol machine operators also report that they like the machinability of ENDURO bars—the fine surface finish, the accuracy of section, the uniform soundness, the ability of ENDURO to hold close tolerances. Send coupon for complete facts on Free-Machining ENDURO Stainless Steel Bars.





REPUBLIC ELECTRUNITE® MECHANICAL TUBING meets all close tolerance requirements for new automotive pump (above). The unusual ductility, uniformity, and workability of ELECTRUNITE Mechanical Tubing also meets the performance requirements of this hydraulic power pump designed and assembled by Thompson Products, Inc., Cleveland, Ohio. Will-O-Hill Industries, Inc., Willoughby, Ohio, subcontractor and specialist in close tolerance tubular stampings, cut $\frac{7}{16}$-inch diameter ELECTRUNITE into units $2\frac{3}{16}$ inches long. Each unit is rolled to form a slight groove in the center, and bent to an angle of exactly 150°. Both ends are subsequently bent in a die, held to a tolerance of ± .0005 inches and finished to an O.D. to ± .0003 inches. Republic Engineers will work with you in solving precision problems and reducing costs with ELECTRUNITE Mechanical Tubing. Send coupon today.

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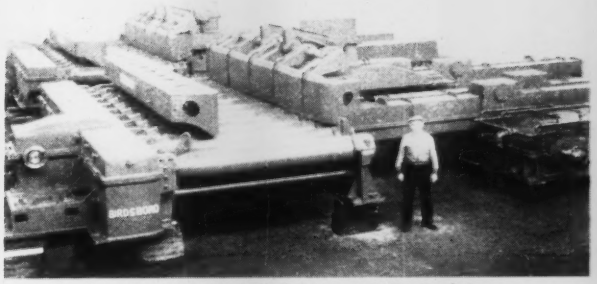

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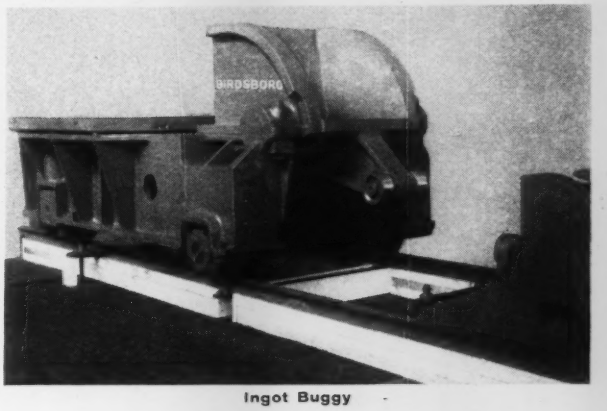

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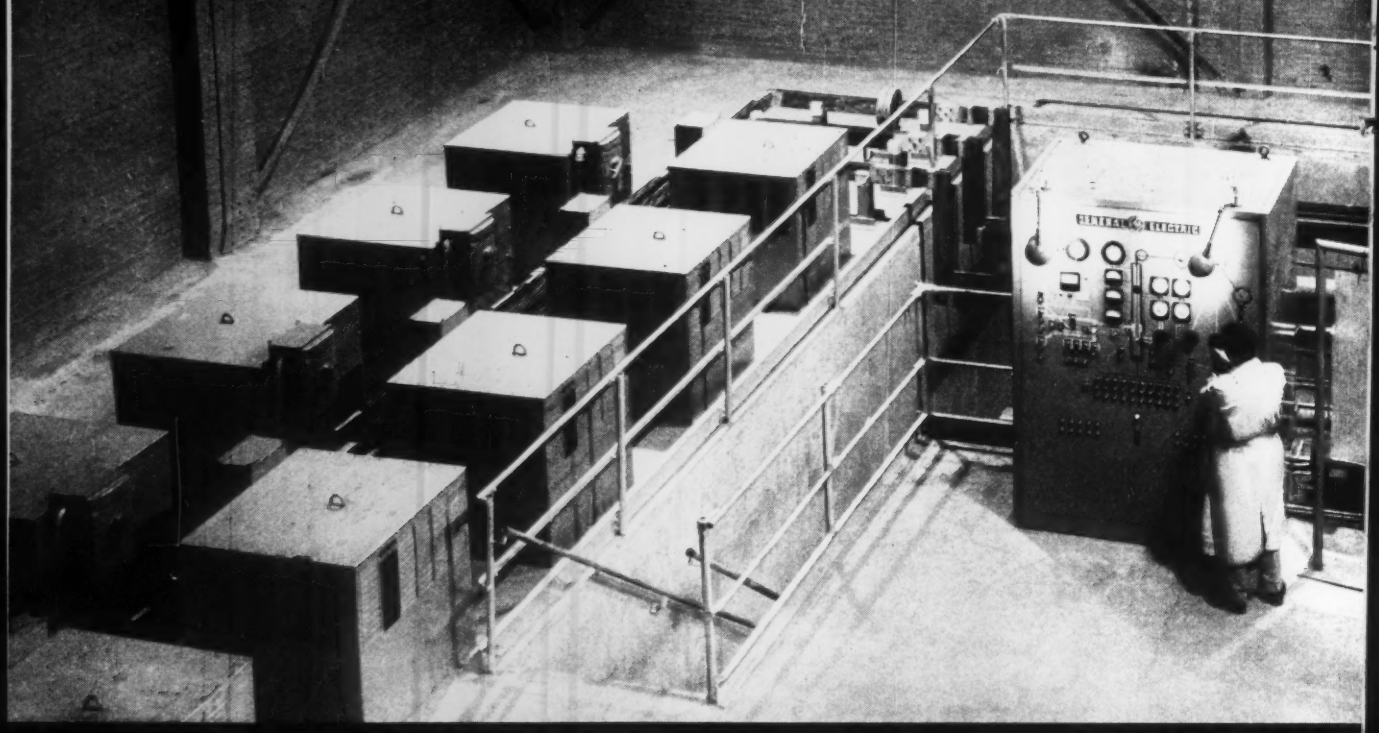
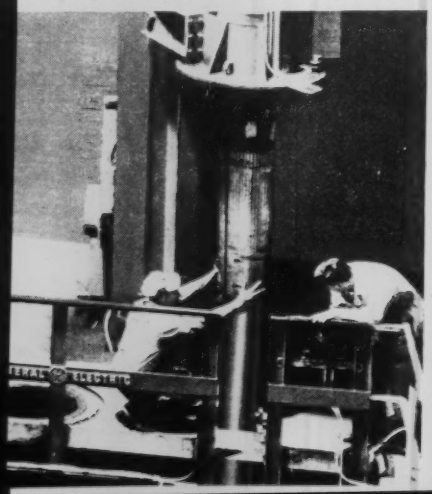


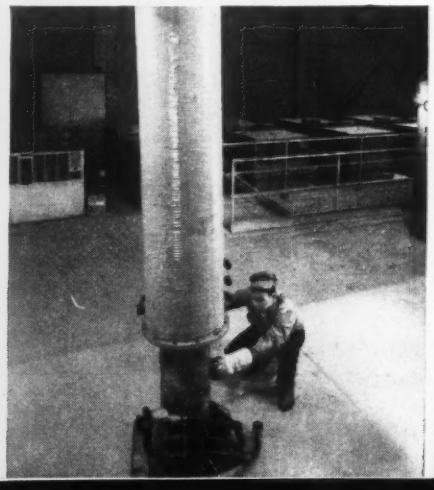
NEW APPROACH to vacuum arc furnace design is reflected in this G-E installation at Universal-Cyclops Steel. Unique current collector and electrode drive permitted a lowering in ceiling height required, helped reduce installation time and cost. G.E. offers a line of furnaces covering ingot sizes from 2½ to 30 inches in diameter, weights up to 25,000 pounds.

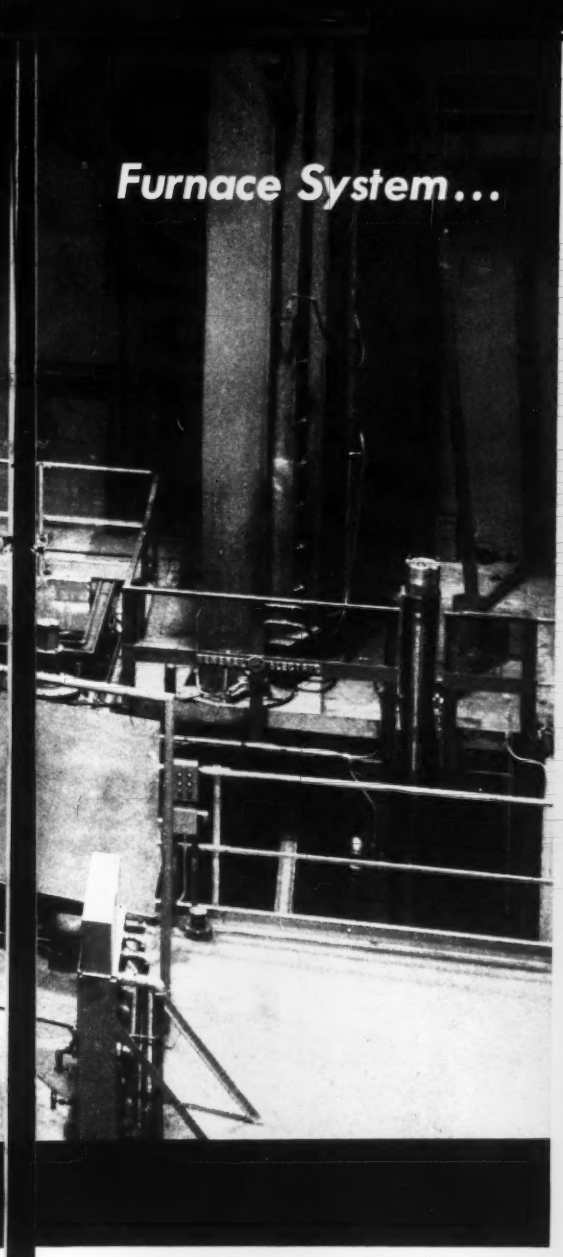
CURRENT COLLECTOR, being attached to electrode, provides a sliding contact—a basic G-E design improvement in vacuum arc furnaces.



ELECTRODE DRIVE SYSTEM, using amplidyne control of proven dependability, is another G-E improvement. Here, operator lowers electrode housing with electrode into furnace body.

COMPLETED molybdenum ingot, being stripped from crucible assembly, has pure, uniform-grain structure that permits faster machining.





Universal-Cyclops Steel produces high-purity Moly ingots

New current collector assembly reduces downtime between melts, eases handling of ingots and electrodes

To help produce molybdenum ingots of high purity for demanding applications, Universal-Cyclops Steel Corp. recently installed a General Electric vacuum arc furnace system in its Bridgeville, Pa. plant. Such production-type furnaces are capable of melting ingots 16 inches in diameter by 66 inches long and weighing up to 5500 pounds. They are designed and engineered by General Electric as co-ordinated systems, complete with all other electric equipment needed from incoming power line to furnace arc.

Successful from the first melt

The furnace's self-supporting, unit-type construction minimized installation time and cost. Successful operation was obtained from the first melt. And Universal-Cyclops officials are completely satisfied with the ease and safety with which the furnace can be operated. These results stemmed from many newly developed features of the furnace itself, plus G-E engineering assistance during installation and startup.

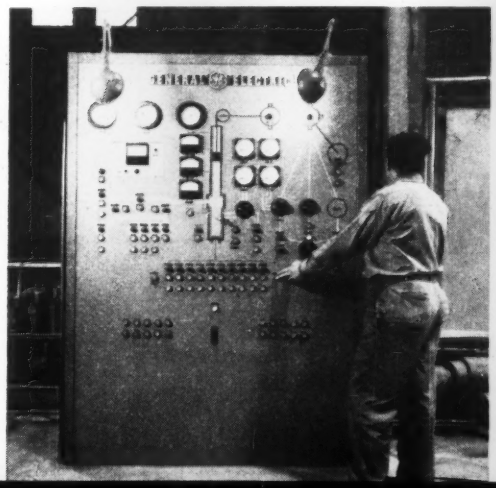
Loading operation simplified

For example, a unique current collector system, using a sliding contact, picks up the arc current from inside the electrode housing. This time-tested principle is similar to that of a d-c motor commutator. This permits raising and swinging the electrode housing to one side for loading, reducing ceiling height requirements, simplifying the loading operation and the handling of electrodes. It also permits using an accurate compact electrode drive system automatically controlled by means of the more dependable, instant-acting G-E amplidyne.

Engineering assistance available

General Electric engineering services are constantly at work in the development and design of even better electrical systems for the vacuum melting industry. For instance, General Electric has completed design of a new silicon rectifier power supply for use in vacuum arc furnace systems, and is prepared to furnish these systems to your industry. From design through application, manufacturing, installation and operation, these services are available to you. Contact your local G-E Apparatus Sales Office early in the planning stage. Meanwhile, send for Bulletins GER-1450 "How to Select a Vacuum Arc Furnace," and GED-3599 "Here's Why G.E.'s Vacuum Arc Furnace Is Your Best Buy" to General Electric Company, Section 659-119, Schenectady 5, N. Y.

SYSTEM-DESIGNED G-E panel for effective control of entire operation contains instruments and devices for regulating arc voltage and current, furnace pressure, etc.

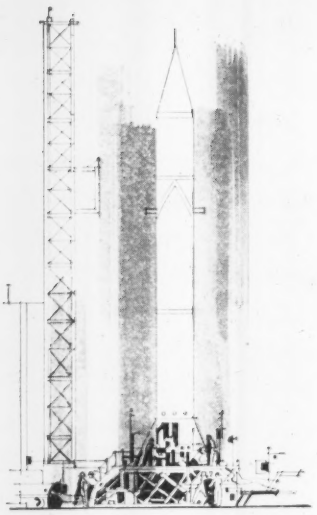


Engineered Electrical Systems for Steel Mills

GENERAL ELECTRIC

Quality... from start to finish!

Versatile ACIPCO Centrifugally Spun Tubes

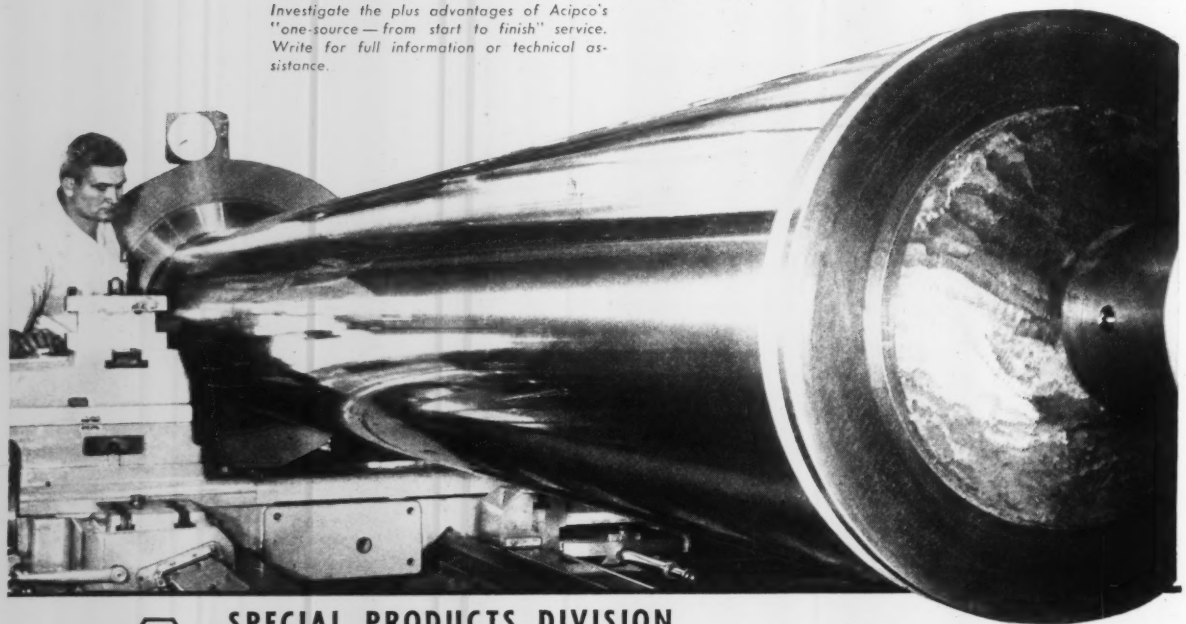


Look at that surface! Belt-polished to ±.0015" tolerance and 25 microinch finish, this 20' long, 26.25" OD, Type 4130 steel tube was produced at ACIPCO for use as a hydraulic cylinder plunger. This application graphically demonstrates the completeness of ACIPCO's extensive Machine Shop facilities.

ACIPCO can turn and finish up to 60" diameters and 41' lengths . . . hone up to 29" ID's and 16' lengths. Turning, honing and other related machining equipment occupy more than 100,000 square feet of modern Machine Shop construction.

ACIPCO tubes are available to you "Custom Spun" in lengths up to 16'. . . diameters up to 50". . . and thicknesses up to 4". Welded assemblies can be supplied in any transportable length. ACIPCO produces standard and special analyses in steel and cast iron, including heat and corrosion resistant stainless steels. Tubes can be furnished as-cast, rough machined or finish machined, including honing.

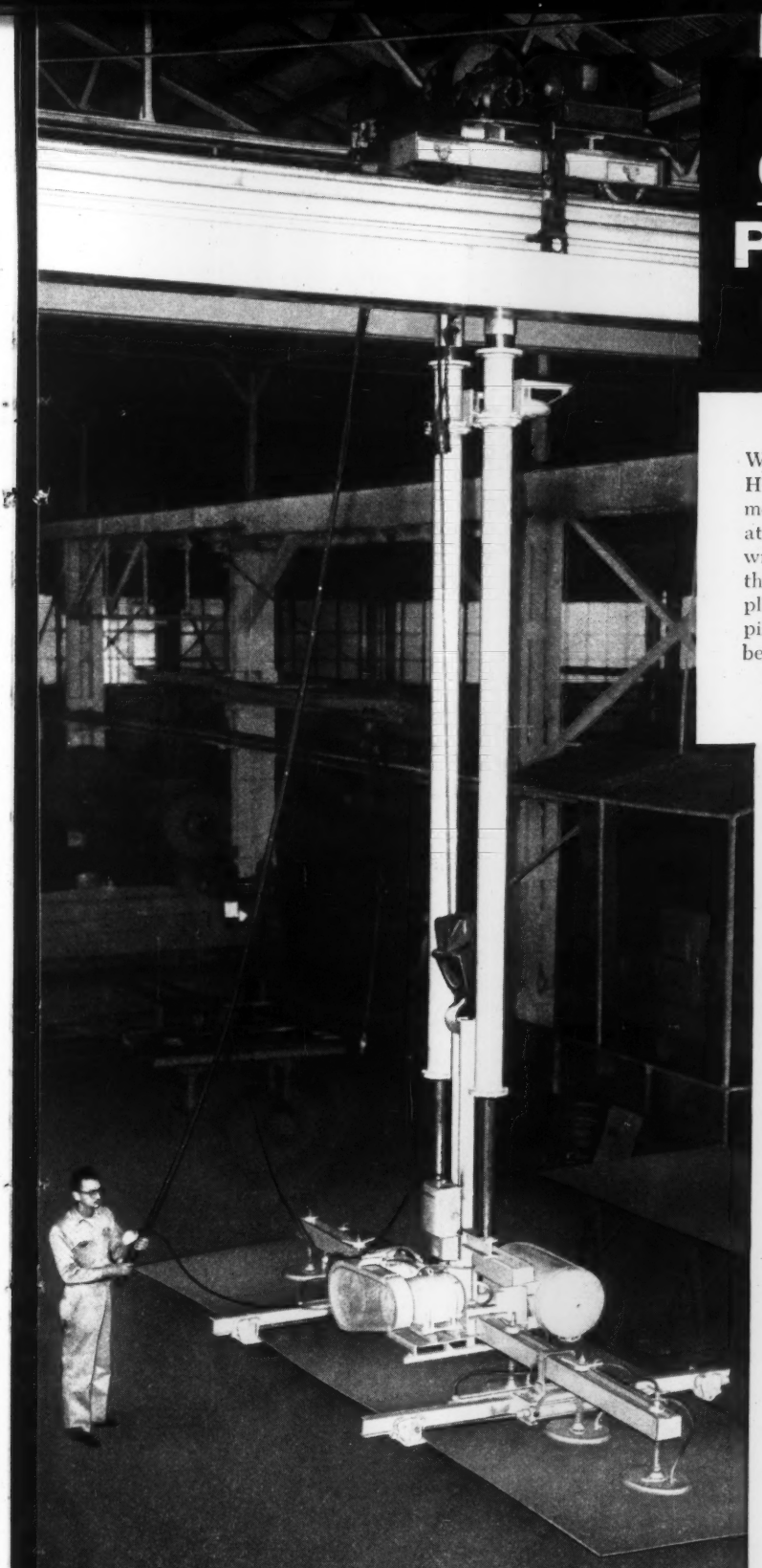
Investigate the plus advantages of Acipco's "one-source — from start to finish" service. Write for full information or technical assistance.



SPECIAL PRODUCTS DIVISION

AMERICAN CAST IRON PIPE CO.

BIRMINGHAM 2, ALABAMA



NOW—

One-Man Plate Handling

WITH YOUR OWN CRANE!

With a NOBLE Pushbutton Plate Handler on your crane, there's no more need for prying up plate to attach slings or grabs...no more wrestling a swaying load through the shop...no more manhandling plate into place on feed tables or piles. One man does the job faster, better, with greater safety.

Here's why:

1. *Automatic* PICK-UP... *NOBLE vacuum lift system picks up sheet or plate on contact with surface; no blocking needed.*

2. *Automatic* MECHANICAL GRABS... *grip plate as soon as lifting begins, provide positive mechanical grip for safe carrying even if power fails.*

3. NO SWING & SWAY... *"stiff leg" crane attachment keeps load under control. One man can guide it safely through shop, spot it accurately on machine feed table or pile—faster!*

NOBLE Pushbutton Handlers are easily installed on cab or floor-operated overhead cranes. Permanent mounting saddle on crane trolley permits attachment or removal of entire handler assembly in 3 minutes, so there's no interference with normal crane use.

Standard lift capacities are 1000, 2000, 3000 and 4000 lbs., larger capacities available on order. Vacuum lift system will handle any type of ferrous or non-ferrous metals or plastics, won't mar finishes or coatings.

Every working hour, every working day, "muscle power" handling methods are eating up profits, slowing production. Want proof?—Check your own shop *now*. Then get the facts on NOBLE Pushbutton handlers—write or wire for complete data. Please address Dep't. S-3.

NOBLE also manufactures complete automatic plate handling systems; brochure on request.

6

NOBLE COMPANY

P.O. BOX 1979 • OAKLAND 4, CALIFORNIA

U. S. and Foreign Patents Pending

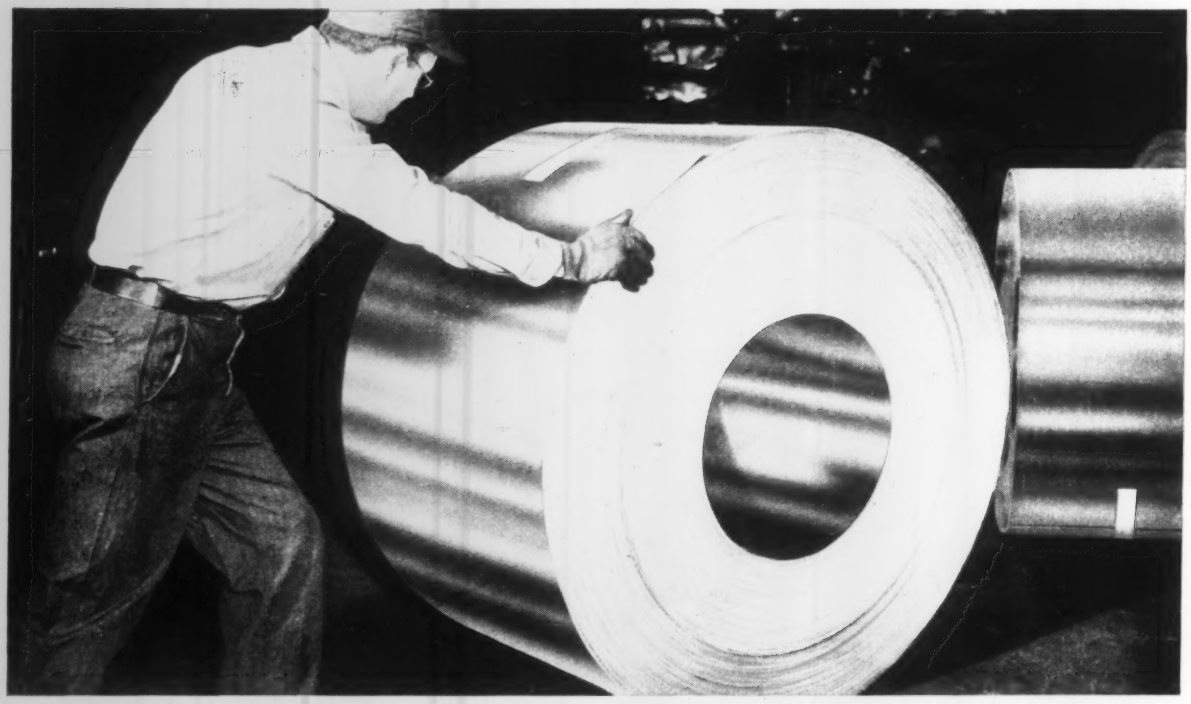
This "SCOTCH" Brand Tape keeps coiled-steel coiled!

A 12-inch strip of "Scotch" Brand Filament Tape holds tons of steel in a coil! That's economy for you—and more than that. "Scotch" Brand Filament Tape, unlike conventional strapping and banding materials, doesn't mar the metal surface, doesn't require special applicating equipment. And it can't cut workers' hands. Strips off clean—no disposal problems, either!

This is the "Scotch" Brand tape that's reinforced with thousands of continuous rayon or glass filaments—much as steel rods reinforce concrete. Tensile strength is up to 500 lbs. per inch of width—yet it has high shock-resistance—up to *5 times* that of other types of industrial tapes. 3M quality control assures the same results with every roll.

Next time you have a banding or strapping job, use "Scotch" Brand Filament Tape—and stick with it! Write Dept. GK-38 for complete information.

"Scotch" is a registered trademark of 3M Co., St. Paul 6, Minn.



When tape costs so little, why take less than . . .

REG U S PAT OFF.

SCOTCH BRAND *Filament Tapes*

Minnesota Mining and Manufacturing Company

. . . WHERE RESEARCH IS THE KEY TO TOMORROW

3M COMPANY

CALENDAR
OF MEETINGS

Mar. 25-28, Packaging Machinery Manufacturers Institute: Convention and show, Atlantic City Auditorium, Atlantic City, N. J. Institute's address: 60 E. 42nd St., New York 17, N. Y. Executive director: Russell L. Sears.

Mar. 27-28, American Hot Dip Galvanizers Association: Annual meeting, Penn-Sheraton Hotel, Pittsburgh. Association's address: 1806 First National Bank Bldg., Pittsburgh 22, Pa. Secretary: Stuart J. Swensson.

Mar. 31-Apr. 2, American Management Association: Special conference on purchasing, Palmer House, Chicago. Association's address: 1515 Broadway, New York 36, N. Y. President: Lawrence A. Appley.

Mar. 31-Apr. 2, Gas Appliance Manufacturers Association: Annual meeting, Greenbrier, White Sulphur Springs, W. Va. Association's address: 60 E. 42nd St., New York 17, N. Y. Secretary: Harold Massey.

Mar. 31-Apr. 2, Society of Automotive Engineers: National production meeting and forum, Drake Hotel, Chicago. Society's address: 485 Lexington Ave., New York 17, N. Y. Secretary: John A. C. Warner.

Apr. 2-4, American Management Association: Special conference on plant location, Roosevelt Hotel, New York. Association's address: 1515 Broadway, New York 36, N. Y. President: Lawrence A. Appley.

Apr. 6-12, Concrete Reinforcing Steel Institute: Annual meeting, Boca Raton Hotel, Boca Raton, Fla. Institute's address: 38 S. Dearborn St., Chicago 3, Ill. Managing director: H. C. Delzell.

Apr. 7-8, Wire Reinforcement Institute Inc.: Annual meeting, Boca Raton Hotel, Boca Raton, Fla. Institute's address: National Press Bldg., Washington 4, D. C. Managing director: Frank B. Brown.

Apr. 8, Material Handling Institute Inc.: Spring membership and directors' meeting, Cleveland Hotel, Cleveland. Institute's address: 1 Gateway Center, Pittsburgh 22, Pa. Managing director: L. West Shea.

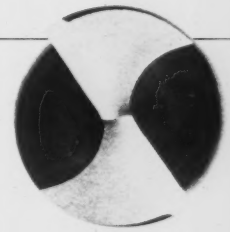
Apr. 8-9, Industrial Truck Association: Spring meeting, Hotel Cleveland, Cleveland. Association's address: 526 Washington Loan & Trust Bldg., Washington 4, D. C. Managing director: William Van C. Brandt.

Apr. 8-10, Industrial Fasteners Institute: Annual meeting, Boca Raton Hotel, Boca Raton, Fla. Institute's address: 1517 Terminal Tower, Cleveland 13, Ohio. Secretary: James J. Whitsett.

Apr. 8-11, Society of Automotive Engineers: Aeronautic meeting and production forum and aircraft engineering display, Hotel Commodore, New York. Society's address: 485 Lexington Ave., New York 17, N. Y. Secretary: John A. C. Warner.

FIRST MAJOR DRILLING IMPROVEMENT IN 100 YEARS!

. . . a Product of CINCINNATI RESEARCH



Standard twist drill with spiral point geometry.

"Spiral point", Cincinnati's new concept in drill point geometry, provides cost-reducing opportunities in your drilling operations.

Produces more precision holes per drill grind.

Produces rounder, straighter, on-size holes...often eliminates reaming.

Maintains hole-positioning accuracy with its self-centering drilling action . . . frequently eliminates pre-centering and expensive guide fixtures.

Requires less thrust force with resulting greater drilling accuracy and less distortion of work piece.

Put this cost-reducing spiral point geometry on the twist drills in your plant with the SPIROPOINT Drill Sharpener, another precision product of Cincinnati Research. Write today for technical bulletin.

Improved Machining Through Research

CINCINNATI LATHE AND TOOL CO.

3210 Disney Street • Cincinnati 9, Ohio

"TRAY-TOP" Lathes • "CINCINNATI" Drilling Machines
"SPIROPOINT" Drill Sharpener

Work with your AIM*... U. S. Reduction Company does...

Aluminum ingots unitized for safer, faster handling

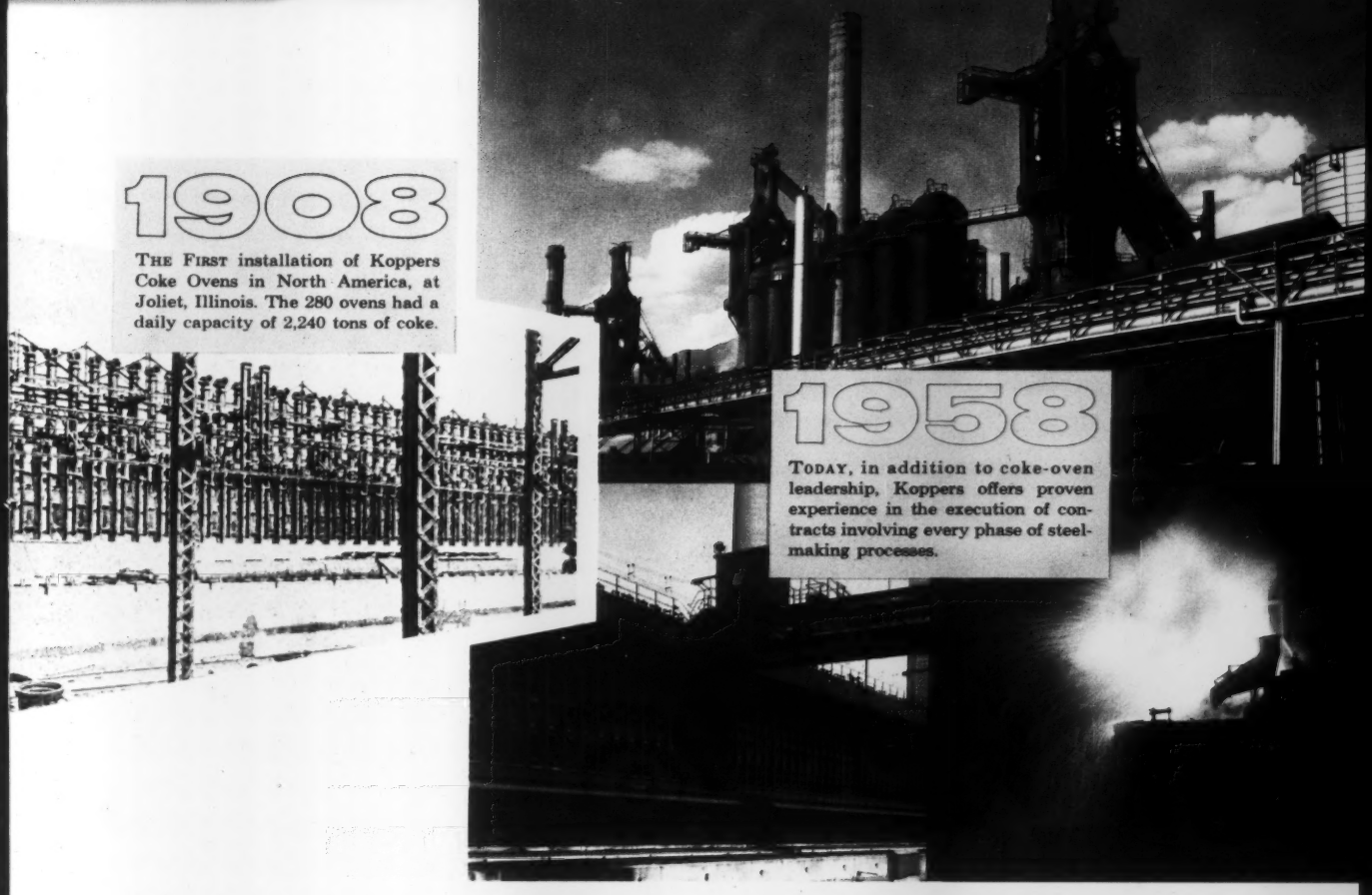
U. S. Reduction Company, East Chicago, Indiana, sought a way to keep unitized aluminum ingots from loosening or coming apart during handling and shipping. Working with their Acme Idea Man, a method of unitizing the ingots with heavy-duty Acme Steel Strapping was developed. (Idea No. U6-16)

An Acme Idea Man like Andy Bassi can help you solve product protection problems.

Now, flat steel straps keep ingots tightly bound into a solid, secure unit. Output of unitized ingots per day is higher, handling and storage safer, easier. Units stay tight and secure during shipment. And customer complaints due to loose ingots are virtually non-existent.

***Work with your Acme Idea Man.** Profit from his help as U. S. Reduction Company does. He has an extensive file of performance-proved ideas that can help you save time and money, build greater customer good will. Write Dept. SDU-38, Acme Steel Products Division, Acme Steel Company, Chicago 27, Illinois. In Canada, Acme Steel Company of Canada, Ltd., 743 Warden Ave., Toronto 13, Ontario.

ACME STEEL **STEEL STRAPPING**


1908
THE FIRST installation of Koppers Coke Ovens in North America, at Joliet, Illinois. The 280 ovens had a daily capacity of 2,240 tons of coke.
1958
TODAY, in addition to coke-oven leadership, Koppers offers proven experience in the execution of contracts involving every phase of steel-making processes.

KOPPERS

50 YEARS OF SERVICE TO THE STEEL INDUSTRY

ON JULY 27, 1908, the first American battery of Koppers by-product coke ovens was fired at the Joliet Works of the old Illinois Steel Company. Since that time, leadership in research and coke-oven technology has established Koppers as the world's leading designer and builder of coke ovens and related equipment.

In North and South America alone, Koppers has built 19,381 coke ovens—equivalent to a battery of 32 ovens *every month* since 1908. Right now, Koppers Coke Plant Department has under construction twelve more batteries, with 552 coke ovens.

Through the years, Koppers has broadened its activities to include the design, construction and start-up of most types of steel-plant installations. The Engineering and Construction Division has proved its ability, in thousands of contracts, to solve practically any construction problem encountered in the steel industry.

On the next few pages, you will find highlighted some of the Koppers services which can expedite your expansion or rebuilding plans.

ENGINEERING AND CONSTRUCTION DIVISION

COKE PLANT DEPARTMENT

FREYN DEPARTMENT

CHEMICAL DEPARTMENT

YEARS OF ENGINEERING AND CONSTRUCTION SERVICE

1908···1958

HOW KOPPERS SERVES THE STEEL INDUSTRY ■

19,381 COKE OVENS. Fifty years ago, Koppers Coke Ovens became the standard by which other coke ovens were judged. Ovens built by Koppers remain in first position today . . . because of improvements such as oven walls made of Hammerhead brick, waste-gas recirculation, precise control of combustion, and design that permits efficient heating with coke-oven, blast-furnace or other lean gases.

Koppers has designed and built 19,381 chemical-recovery coke ovens in the Western Hemisphere alone. Many thousands more have been installed in other parts of the world.

COAL-CHEMICAL RECOVERY. The dephenolizing plant shown at the left is one of four such plants designed and constructed by Koppers. Installed at a large Midwestern steel plant, it is capable of removing 98% or more of the phenols from crude ammonia liquor.

The Coke Plant Department of Koppers is skilled and experienced in all problems associated with coke-plant design, construction and operation. Koppers engineers can help you with the planning, installation, and operation of coal and coke preparation and handling systems, coal-chemical recovery plants, and all other coke-plant equipment.

.TODAY

ANY JOB...ANYWHERE... WELL DONE

Koppers and its Freyn Department have the proven ability to handle the engineering and construction work involved in all phases of steelmaking.

Koppers personnel have *actual experience*, around the world, in the design and installation of blast furnaces, ore-handling facilities, sintering plants, open-hearth shops, rolling mills, continuous-casting units, electric-furnace shops, mold foundries, and other equipment.

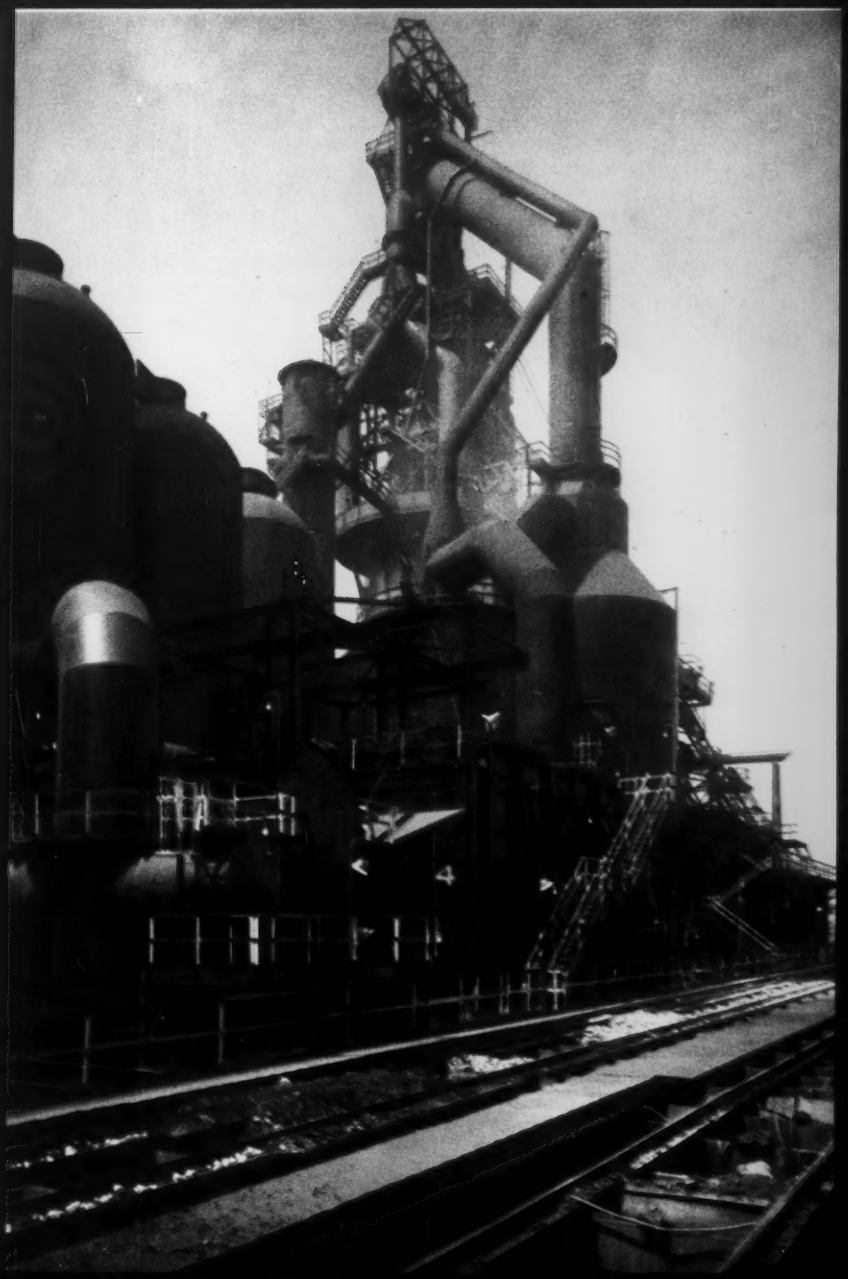
96 BLAST FURNACES, by Freyn and foreign associates, are currently in operation throughout the world. The furnaces have a total annual capacity of more than 27 million net tons.

91 SINTERING MACHINES, designed by Koppers American Ore Reclamation Section (AORCO), are in active service in eight countries. Total annual capacity of these machines is over 32 million net tons. Sixteen more AORCO machines with a total annual capacity of over 14 million tons are currently on order and will be completed by 1959. Koppers is now installing two 12-foot-wide sintering machines, both of which will be larger than any now in operation.

76 OPEN-HEARTH FURNACES have been designed and engineered by the Freyn Department since 1942. Forty-one of these installations are in the United States, including seven 350-ton furnaces completed recently for a large Eastern steel plant.

CONTINUOUS CASTING OF STEEL was pioneered in North America by Koppers. The first commercial-scale installation on this continent was designed and constructed in 1954 by the Freyn Department.

Freyn-Design assures you that the men handling your construction work understand the steel industry and its problems . . . and have the ability and experience needed to tailor an installation to your special requirements.



FROM KOPPERS . . .

CHEMICAL PLANTS TOO !

Experience—Koppers has a wide variety of experience in the design and installation of chemical plants. Engineers of the Chemical Department have built plants to distill tar . . . to reform gas . . . and to produce styrene monomer, polystyrene, polyethylene, ammonia, and a variety of other chemicals.

Recently the Chemical Department has completed a new coke-oven light-oil purification plant based on hydrogenation to remove sulfur and other compounds. It is the largest such unit in the world. Koppers also has made available to the steel industry a new process for the *recovery and regeneration* of waste acid in steel-pickling operations.

WHAT does it all mean TO YOU?

The three departments of Koppers Engineering and Construction Division bring you a unique combination of experience and service.

They bring you actual proof of performance in the planning, construction and operation of nearly every type of steel-plant installation.

They bring you a rich background of operating know-how in metallurgical, coke, and chemical plants, gained through Koppers own production experience.

They bring you the vast staff resources available only from a large and diversified company such as Koppers. They can call on experts to assist you in market research and development . . . and in purchasing and other problems.

In addition, they bring to steelmakers the results of constant exploration of new techniques and processes evolving from continuous research and development.

Investigate Koppers and its ability to serve you.

50 YEARS OF ENGINEERING AND CONSTRUCTION SERVICE
1908 · · · 1958

KOPPERS

KOPPERS
ENGINEERING AND CONSTRUCTION

INSPECTION WITH US IS AN INSIDE JOB

Damascus checks the inside as well as the outside of every piece of stainless steel pipe and tubing. With the help of a boroscope, the weld seam is examined along its full length. Skilled inspectors sort out faulty tubes . . . eliminate possible failures. The Damascus stamp of approval is your assurance of a sound product, carefully selected to fill your order.

For prompt mill shipments of stainless steel pipe and tubing in a wide range of sizes and A.I.S.I. analyses, call Damascus direct — for local service call your nearest STEEL SERVICE CENTER.

Write for free catalog.

AMERICAN STEEL WAREHOUSE ASS'N

DAMASCUS TUBE COMPANY

STAINLESS STEEL TUBING AND PIPE

GREENVILLE, PENNSYLVANIA

FORMED STEEL TUBE INSTITUTE

MOTOR MAINTENANCE TIP:

Use Shovel Regularly

Without the vigorous use of a shovel, this Fairbanks-Morse 100 hp. motor would be buried under corrosive coal dust. Even so, as it drives a briquette press 16 hours a day, there is a cloud of coal dust coating motor windings and inhibiting normal cooling . . . steam and sulphur release sulphuric acid that can cause mechanical and electrical failure.

YET—After eight years in this rugged service the slip-ring motor in its dripproof frame has operated at peak efficiency without a single breakdown. Other F-M motors in this same difficult environment have operated more than 40,000 hours without breakdown—completely eliminating motor failures where such failure was commonplace before.

There is no better way to judge design advantages than to look at the long performance record of equipment in service. Your nearby Fairbanks-Morse Motor Specialists can show you many applications similar to your own.

When Performance Is the Measure,
F-M Motors Are the Standard.

Fairbanks, Morse & Co., Chicago 5, Ill., Dept. S-3-24.

FAIRBANKS-MORSE

a name worth remembering when you want the BEST

ELECTRIC MOTORS AND GENERATORS • DIESEL LOCOMOTIVES AND ENGINES • PUMPS • SCALES • RAIL CARS • HOME WATER SERVICE EQUIPMENT • MAGNETOS

Something new... made better by aluminum

Aluminum "sail" of atomic sub breaks water as ship surfaces. "Sail" is the protective sheathing around superstructure and controls.

New alloys make aluminum a seagoing metal

The new atom-powered submarines "Nautilus" and "Seawolf" offer dramatic proof that aluminum can be just as much at home in salt water as on dry land. Both of these modern vessels are equipped with streamlined aluminum sheathing above decks to reduce topside weight. Other interesting marine uses of aluminum include a speedy new Canadian subchaser, the superstructure of passenger ships like the new Norwegian liner *Bergensfjord* and the S. S. United States and hundreds of different types of pleasure craft.

Key to the use of aluminum in many of these marine applications is the development of special alloys and welding techniques by Aluminium Limited research. With these problems solved, more and more aluminum will be used for marine applications, broadening the market for aluminum fabricators. Aluminium Limited research is working continually to improve aluminum's usefulness in this and other important fields of application.

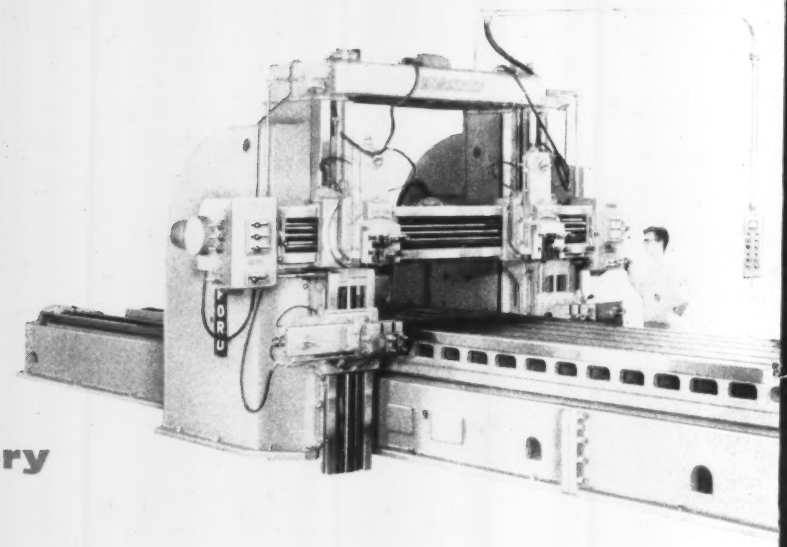
Aluminium Limited sells no consumer products in the United States but its smelting facilities in Canada assure a dependable supply of aluminum ingot to metal fabricators.

Supplying U. S. industries with primary aluminum from Canada

Aluminium Limited *Sales, Inc.*

630 FIFTH AVENUE • NEW YORK 20, N. Y.

CLEVELAND • CHICAGO • LOS ANGELES • DETROIT • ATLANTA • BUENOS AIRES • SÃO PAULO

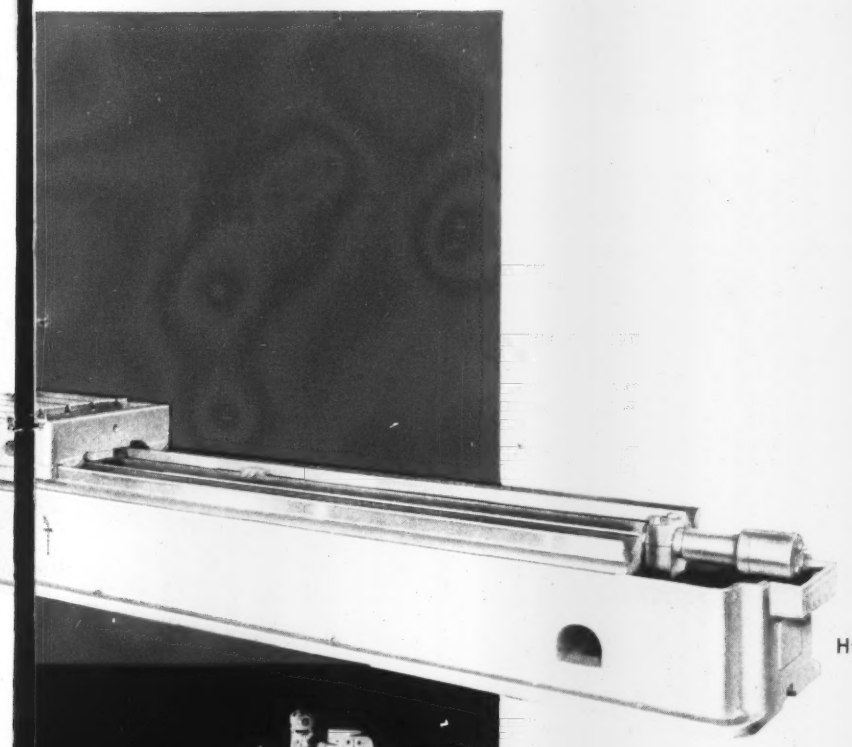


the hy-draulic story

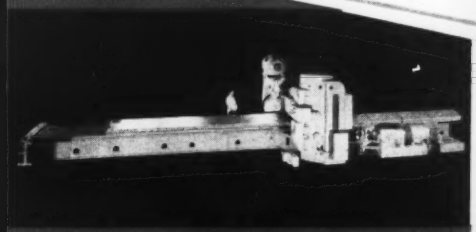
"speeds for carbides plus heavy cut efficiency"

"push-button control speeds operation and set-up"

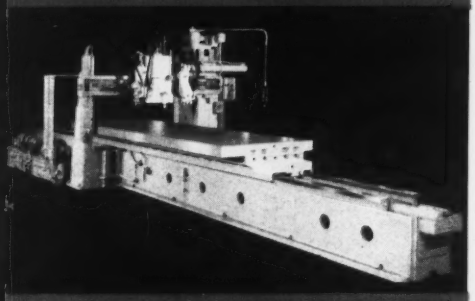
"hy-draulic triple circuit provides 3 distinct drives in a single machine"



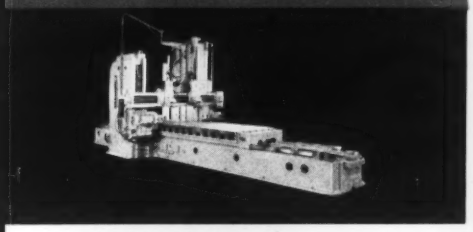
Hy-Draulic Double Housing Planer



20' Hy-Draulic Planer Grinder



Hy-Draulic Spar Planer with Twin Kopy-Kats



Hy-Draulic Openside Planer
with Outboard Support

. . . only with hy-draulic design do you get these advantages!

Hy-draulic drive and feeds, as basic features of Hy-Draulic Machine Tools, provide outstanding performance measured in terms of work quality, high production and low operating cost.

Today, countless metal-cutting operations are performed effortlessly, at low cost, and with high production rates on Rockford Hy-Draulic designed machines. Hy-draulic control and power respond instantly so that inexperienced operators easily adapt infinite speeds and feeds to the most complex and accurate machining cuts.

Compare your present shaping, planing or slotting operations with these modern production features, and determine the savings available with Hy-Draulic flexibility. Our engineers will be glad to furnish estimates for your particular requirements.

ROCKFORD MACHINE TOOL CO.
2500 KISHWAUKEE STREET • ROCKFORD, ILLINOIS

h
HYDRAULIC

SHOULD WE MAKE OUR OWN OXYGEN?

MESSER EXPERIENCE AND YOUR OWN NEEDS CAN GIVE YOU THE RIGHT ANSWER

Whether to manufacture oxygen or buy it from a reliable bulk producer is a question being widely asked in many industries today.

What's the answer in *your* case? Only a careful analysis of your own needs, backed by sound and broad experience in this specialized field can provide the solution.

Messer *has* this experience. Messer engineering has designed and installed over a thousand oxygen-producing plants all over the world—183 in the United States alone. Get an unbiased, authoritative analysis of your oxygen - nitrogen - argon requirements from American Messer.

WRITE FOR INFORMATION

We'd be happy to answer any questions you may have regarding the production of oxygen. No obligation, of course. Just write

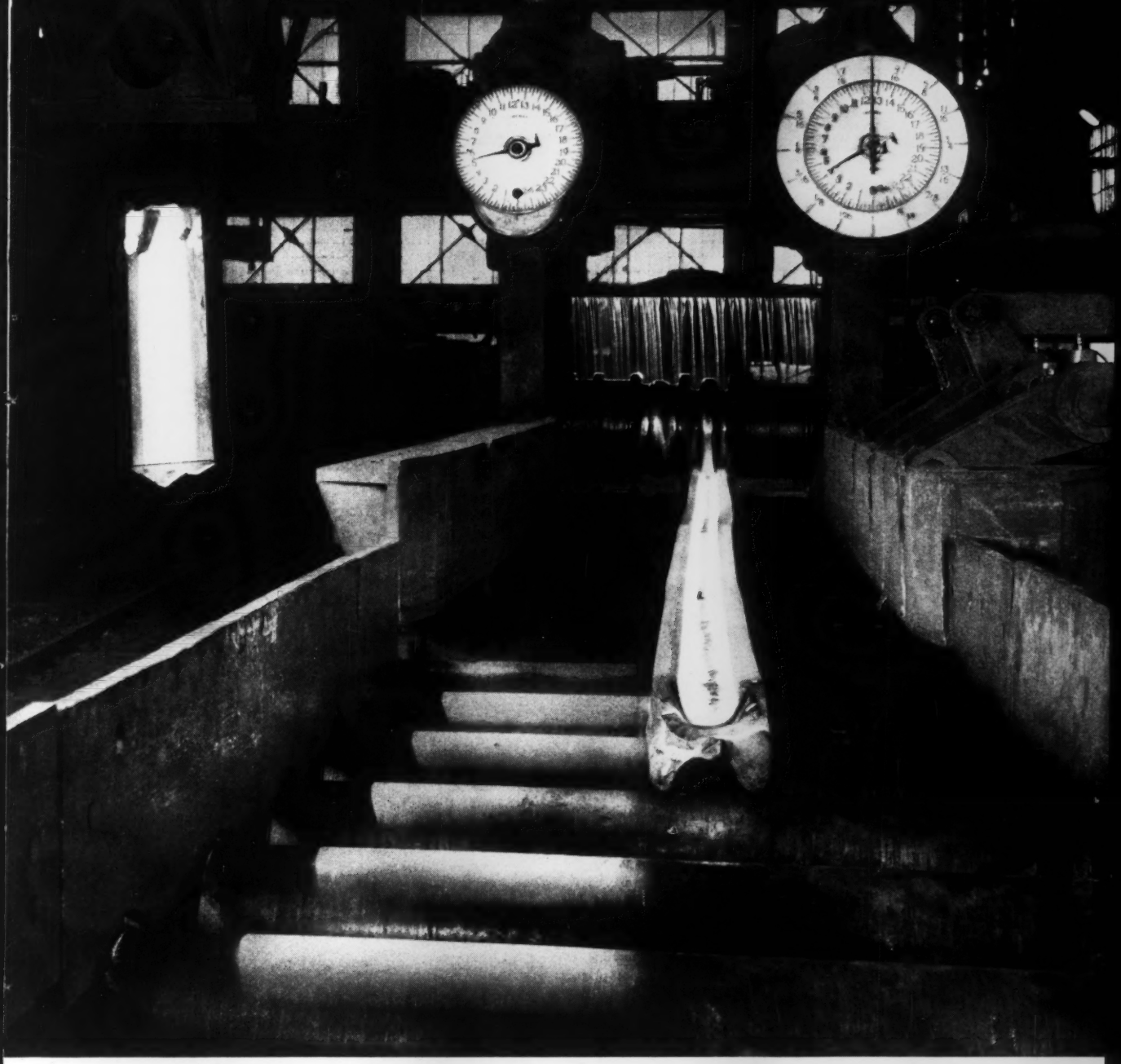
AMERICAN MESSER CORPORATION
Chrysler Building, 405 Lexington Ave.
New York City

AMERICAN MESSER CORPORATION

CHRYSLER BUILDING • 405 LEXINGTON AVENUE • NEW YORK CITY

Messer

"THERE IS NO SUBSTITUTE FOR MESSER EXPERIENCE"



This is America's basic growth steel

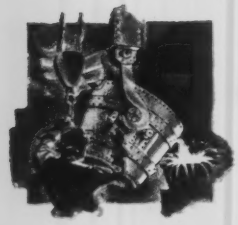
This is structural steel taking shape. Together with steel plate, structural steel shapes have played an indispensable part in America's growth.

And America is still growing . . . stretching out roads and bridges in a 100-billion-dollar highway program . . . constructing plants and buildings for its fast-increasing industry . . . turning out more and more new and basic products with the old reliables, structural steel shapes and steel plate.

Barium Steel plants have more than a 100-year history of growth through their contributions to industrial America. And by specializing in indispensable steel products—structural shapes, steel plate and heavy wall seamless pipe and tubing—Barium will continue to grow and to play an active part in the nation's expanding economy. 7.7

BARIUM STEEL
CORPORATION

BARIUM STEEL CORPORATION, 25 BROAD STREET, NEW YORK 4, N. Y.



AMERICAN ORIGINALS IN IRON AND STEEL

For exchange: A pig for a pot

In 1788, the founder of Vermont's iron industry, the Honorable Mathew Lyon, built a forge and furnace near Bennington.

In those days, coins were scarce and currency was of dubious value, but iron implements were highly prized. Products of local farms were also as welcome as money, so barter was the accepted practice. For this reason, the record tells us, it was not a strange sight to see a well-fed pig being led or dragged to the local forge to be exchanged for a plowshare or cooking pot.

Thus it was that, even in those early times, the iron furnace became the trading place . . . the industrial and commercial center.

Today, iron and steel production are still the heart of our nation's industry. And, as demands have increased, new methods and materials have helped improve steel's quality and increase its quantity.

Among such materials are Baker's Magdolite and Jebcolite . . . the original dead-burned dolomites. Both Baker's Magdolite, for open hearth use, and Baker's Jebcolite, for electric furnace use, provide greater furnace efficiency, more uniform ingots, and lower refractory costs. Both are superior in composition, preparation, strength, economy and quality.

Make sure you are using them.

ANOTHER AMERICAN ORIGINAL

JEBCO
PRODUCTS
SINCE 1889

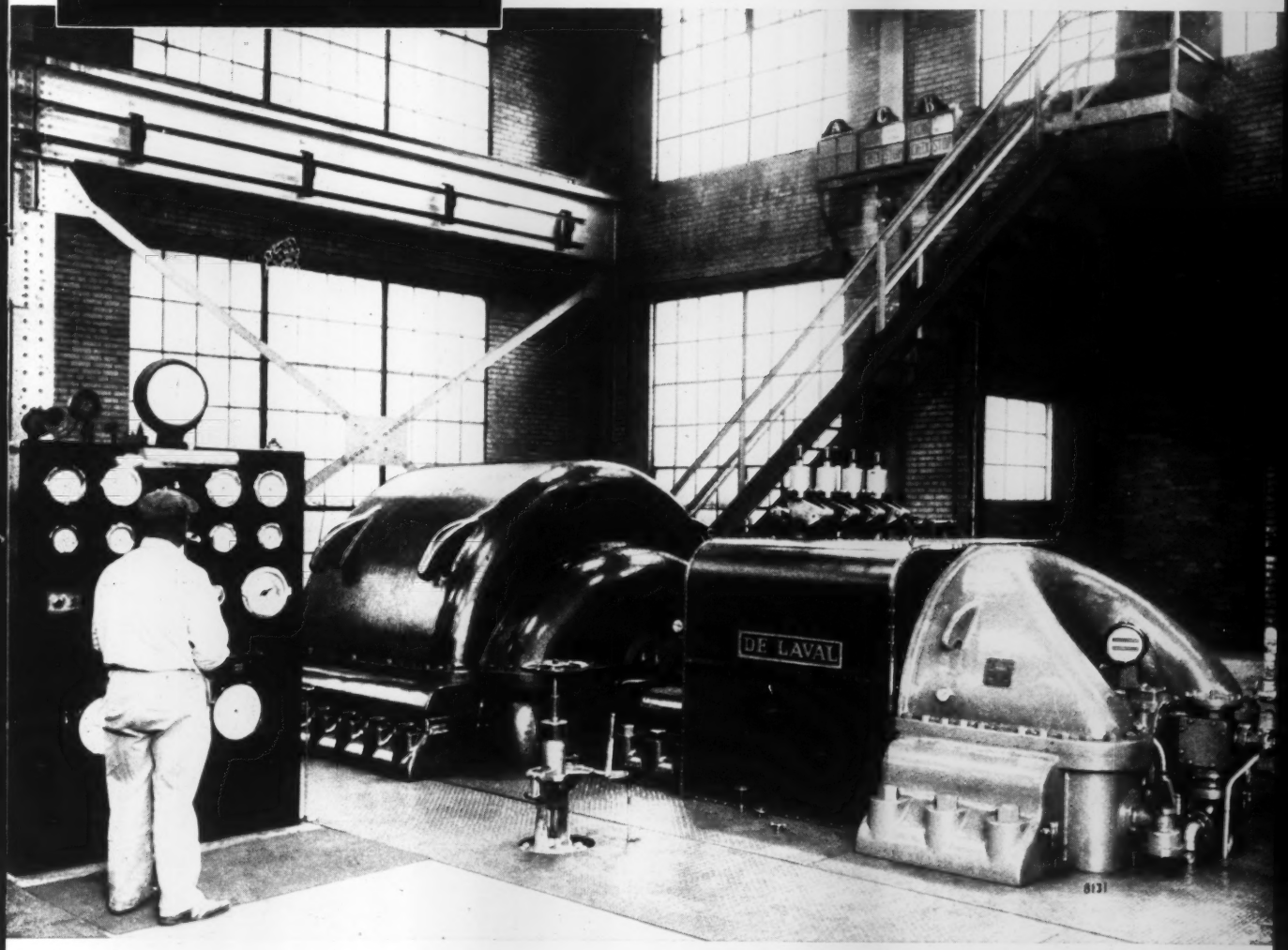
BAKER'S MAGDOLITE
The original dead-burned dolomite

THE J. E. BAKER COMPANY

YORK, PENNSYLVANIA • PLANTS: BILLMEYER, YORK, PENNSYLVANIA • MILLERSVILLE, OHIO

DE LAVAL
BLAST FURNACE BLOWERS

give 20 years of service at Great Lakes Steel Corp.



Shown is one of two De Laval centrifugal blast furnace blowers at the Ecorse, Michigan, plant of the Great Lakes Steel Corporation, Division of National Steel Corporation. This 85,000 cfm unit was installed twenty years ago; another 75,000 cfm unit went on the line a year earlier. Both have given dependable round-the-clock service ever since. These turbine-driven blowers are hooked up to a multi-head which enables either one to be used in conjunction with any of the three blast furnaces.

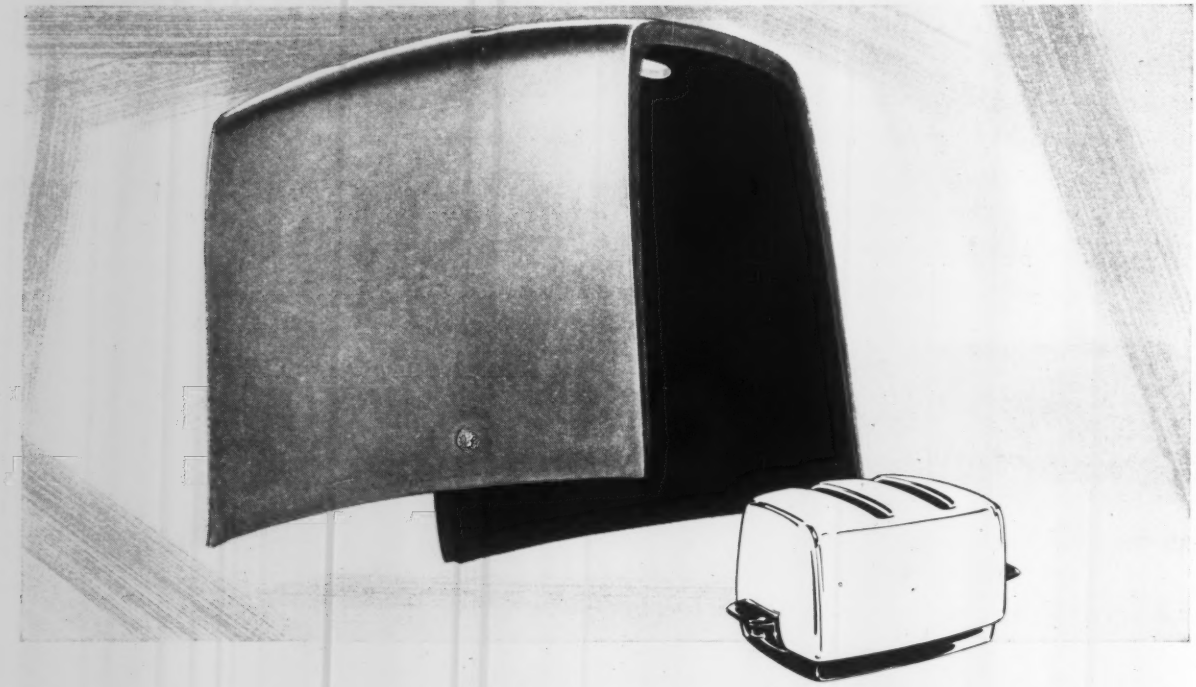
De Laval centrifugal blowers are built in single and multi-stage types to supply air in volumes up to 150,000 cfm for all classes of service in steel, gas and coke plants. The wealth of application experience acquired by De Laval over the years assures a correct and economical solution to your blower problem.

Send for Bulletin 0504

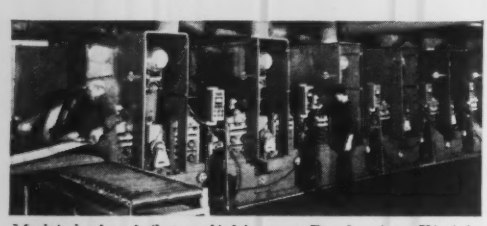
DE LAVAL *Centrifugal Blowers*

DE LAVAL STEAM TURBINE COMPANY
860 Nottingham Way, Trenton 2, New Jersey

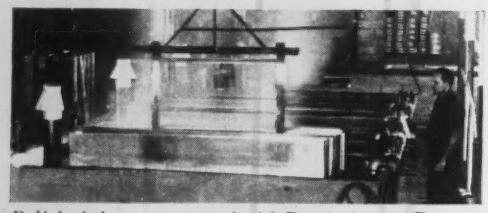
DL-381



Form flat-polished metal without marring!
Use Bonderite and Bonderlube



Multiple head flat polishing at Production Finishing Corporation, Detroit.



Polished sheets are treated with Bonderite and Bonderlube before forming.

Bonderite and Bonderlube protect that smooth, flat-polished finish through forming and fabricating. Parts go direct to the plating bath from forming operations with only a light buffing.

All types of products are being made this way—automobile bumpers, automotive trim, toaster and small appliance bodies, home laundry equipment components and many other formed parts.

Cost reductions are big with Bonderite and Bonderlube: Polishing costs on bumpers went from 9c a square foot for contour polishing to 0.8c a square foot for flat polishing before forming. Savings of 10c to 30c a square foot have been reported by other industries.

The Parker technical representative has full information on this cost-cutting combination. A letter or phone call will bring it to you.

Since 1914—leader in the field

PARKER RUST PROOF COMPANY
2158 E. MILWAUKEE, DETROIT 11, MICHIGAN

BONDERITE	BONDERITE and BONDERLUBE	PARCO COMPOUND	PARCO LUBRITE	TROPICAL
corrosion resistant paint base	aids in cold forming of metals	rust resistant	wear resistant for friction surfaces	heavy duty maintenance paints since 1883

*Bonderite, Bonderlube, Parco, Parco Lubrite, Parker Pre-Namel—Reg. U.S. Pat. Off.

Electromet . . . Making metals do more all the time!

Knows alloys...will travel!

Ferro-alloy specialists from ELECTROMET often provide information helpful to melt-shop operators all over the nation.

These specialists can keep you up to date on the most effective and economical use of more than 100 ELECTROMET alloys. They help resolve unusual metallurgical problems with the aid of more than 300 scientists who have specialized equipment available at ELECTROMET's laboratories.

They have facts on new research and development work which you frequently can apply for savings in cost. They will give their immediate attention to your ideas on new alloys that can cut furnace time or add special qualities to the metal you make.

This metallurgical service is one of the many reasons why you get more for your money when you buy ELECTROMET products.

ELECTRO METALLURGICAL COMPANY, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, New York.

Electromet
FERRO-ALLOYS AND METALS

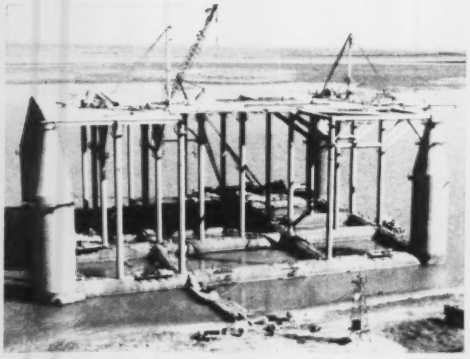
UNION CARBIDE

The terms "Electromet" and "Union Carbide" are registered trade-marks of Union Carbide Corporation.

When you buy from U. S. Steel

STEEL + PLUS IN ACTION: FACILITIES

This offshore drilling rig weighs in at *8 million pounds.* It was designed by the owner, Kerr McGee Industries, and is 100′ high, 242′ long, 202′ wide—the twin of the world's largest ocean-going drilling barge. Despite the size of this monster rig, our American Bridge Division built it in just *two pieces,* using our extra-wide 120-foot marine ways at Orange, Texas—a good example of the unexcelled steel facilities you can count on at United States Steel.



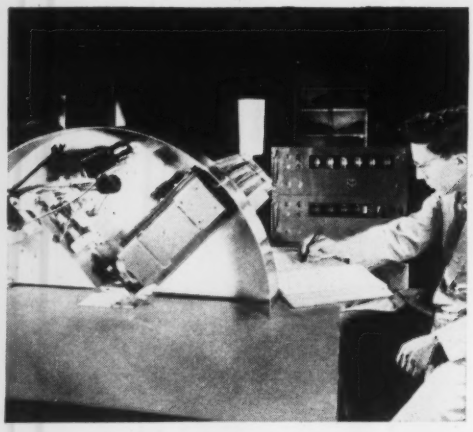
STEEL + PLUS IN ACTION: MARKETING ASSISTANCE

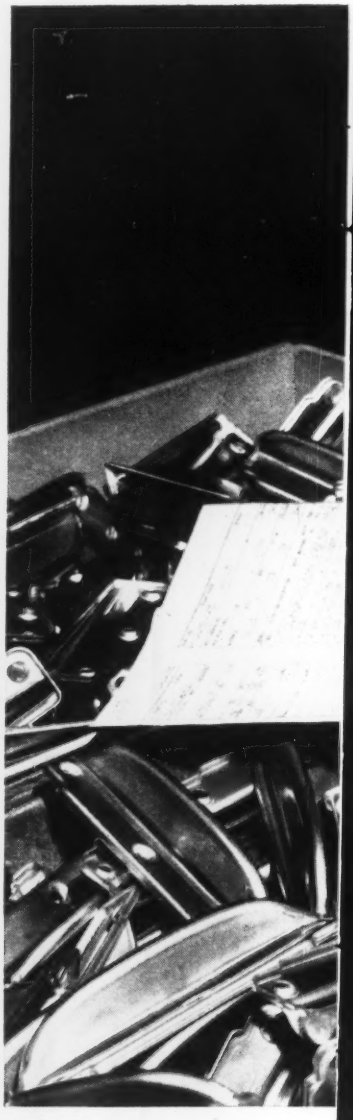
At United States Steel, we spend a lot of time trying to sell our *customers'* products. For example, this picture was taken at the Chemical Industries Exposition. The United States Steel exhibit explained the many advantages of Stainless Steel chemical equipment made by our customers. Result: our customers sell more equipment because our promotional activities help to *presell* products made of USS steels.

STEEL + PLUS IN ACTION: RESEARCH

U. S. Steel has an unusual X-ray gage that measures the thickness of tin on tinplate. The X-rays penetrate the tin coating, causing the iron atoms in the steel *base* to fluoresce and emit X-rays of their own. As these new X-rays emerge from the base, they are partially absorbed by the tin coating as they pass through. This absorption is measured with a Geiger counter, which tells us how thick the tin coating is.

USS is a registered trademark





American Bridge • American Steel & Wire and Cyclone Fence • Columbia-Geneva Steel • Consolidated Western Steel • National Tube • Oil Well Supply
Tennessee Coal & Iron • United States Steel Homes • United States Steel Products • United States Steel Supply and Gerrard Steel Strapping
United States Steel Export Company • Universal Atlas Cement Company

you get STEEL + PLUS

STEEL + PLUS IN ACTION: TECHNICAL ASSISTANCE

One of Amerock Corporation's hardware products is a window sash lift, and it became necessary for them to substitute a less expensive metal in its manufacture. They needed a metal soft enough to take the extremely deep draw yet hard enough to retain a finish suitable for plating. Metallurgists from American Steel & Wire Division suggested a special cold rolled strip steel that solved the problem where all others had failed.

USS **United States Steel**

Brainard Strapping
...WITH EXTRA BACKING

Brainard Steel Strapping has something extra to offer. As a division of Sharon Steel, Brainard Strapping is fabricated from steel that is quality controlled from mine to market. Sharonsteel, a buy-word among steel buyers, is your assurance of the finest steel strapping available when you buy from Brainard.

Sharon quality in Brainard Strapping is available in all standard sizes and gauges of tensional and heavy duty strapping.

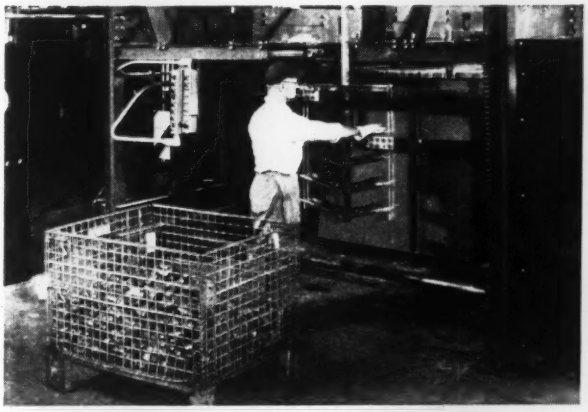
SHARONSTEEL

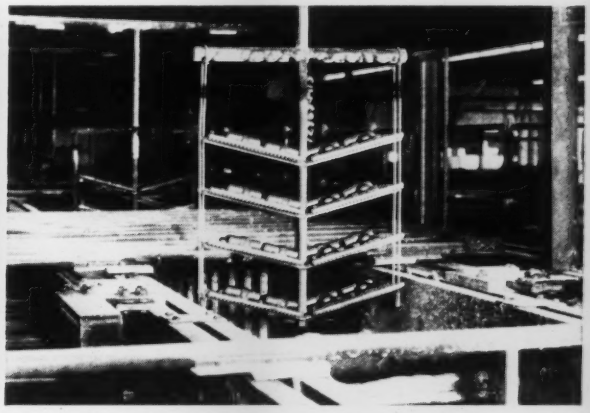
Brainard Steel Strapping

SHARONSTEEL

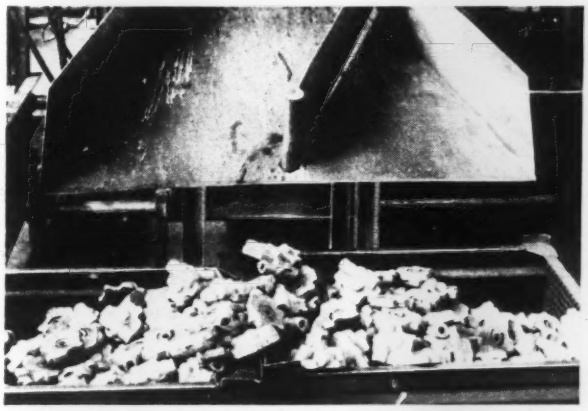
Brainard Steel Division, Sharon Steel Corporation
Larchmont Avenue, Warren, Ohio

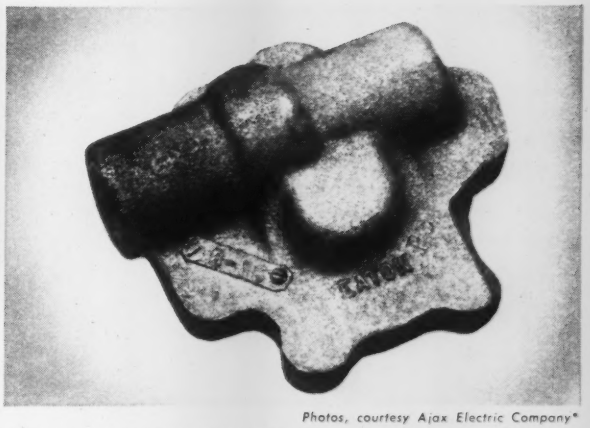
573





DIRTY CASTINGS COME CLEAN





*Photos, courtesy Ajax Electric Company**

CHEMICALLY CLEAN WITH VIRGO® ELECTROLYTIC SALT

How Eaton Manufacturing saves up to 75% on salt for desanding

A short dip in this new, fully mechanized furnace, and castings come up completely cleaned for the Eaton Manufacturing Company.

Inside the furnace is a new desanding salt—Virgo Electrolytic Salt—which costs as little as one-fourth as much as comparable electrolytic cleaners.

This molten salt takes just 15 to 20 minutes to clean even the hard clinging sand, scale, graphite, and other surface impurities from iron and steel castings.

Because of this speed, the new Eaton furnace can handle up to 5400 gross pounds of castings per hour, heating them to 900° F. with 274 KWH Hr. One man operates the entire furnace.

No acid dip. The Virgo Electrolytic Salt process requires no acid dip after rinsing. Of course, if other operations require it, you *can* use the acid treatment.

The bath's electrolytic action leaves all casting surfaces resistant to rust, helps *keep* them clean until further processing.

Samples tested. We have a bath set up in the Hooker laboratories, so you can prove for yourself how Virgo Electrolytic Salt can clean your castings—*for less money*. Write us about submitting samples for such test cleaning.

For technical data on the salt and the process, send us the coupon.

**Designers and builders of mechanized furnace.*

Check here for data on Virgo Electrolytic Salt and these other Hooker chemicals used for cleaning and treating metals:

- ☐ Virgo Electrolytic Salt
- ☐ Virgo Descaling Salt
- ☐ Virgo Molten Cleaner
- ☐ Caustic Soda
- ☐ Muriatic Acid
- ☐ NIALK® TRICHLORethylene

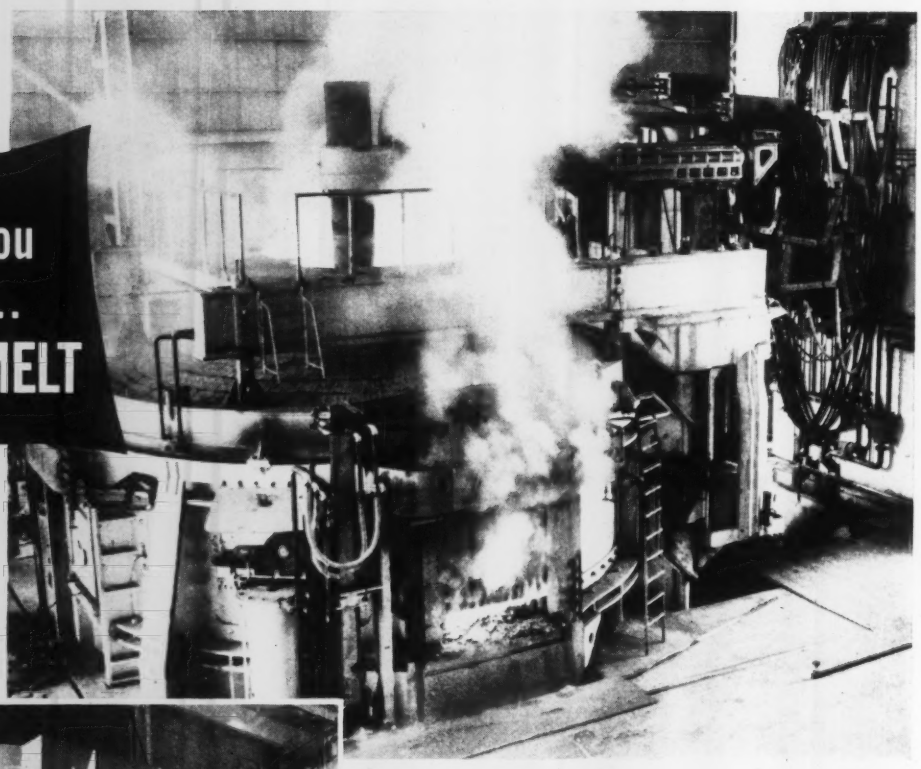
Clip and mail to us with your name, title and company address.

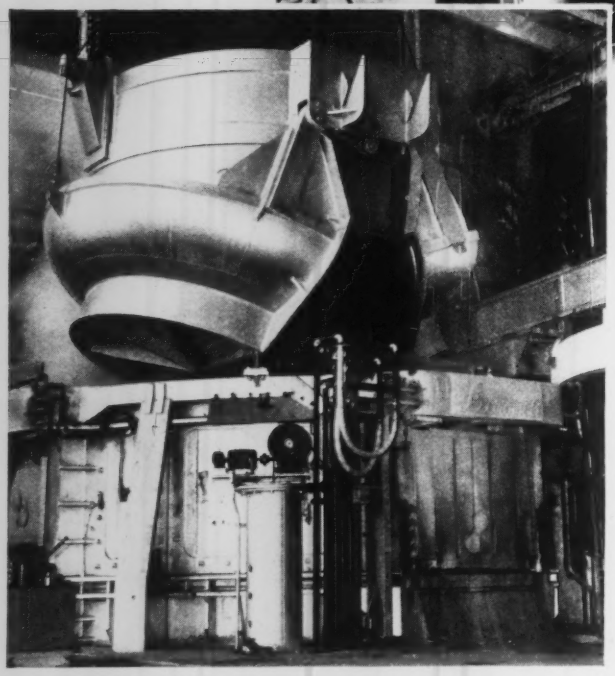
HOOKER CHEMICALS PLASTICS

HOOKER ELECTROCHEMICAL COMPANY
1203 UNION STREET, NIAGARA FALLS, N. Y.

Niagara Falls Tacoma Montague, Mich. New York Chicago
Los Angeles Philadelphia Worcester, Mass.
In Canada: Hooker Chemicals Limited, North Vancouver, B. C.

When you melt... LECTROMELT





first of a powerful pair

200-ton heats are now being produced in this 24-foot Lectromelt Furnace. A second of similar capacity will soon be installed here in this Southern steel mill.

Catalog No. 10 describes Lectromelt furnace equipment for melting and refining. For a copy, write Lectromelt Furnace Division, McGraw-Edison Company, 323 32nd Street, Pittsburgh 30, Pennsylvania.

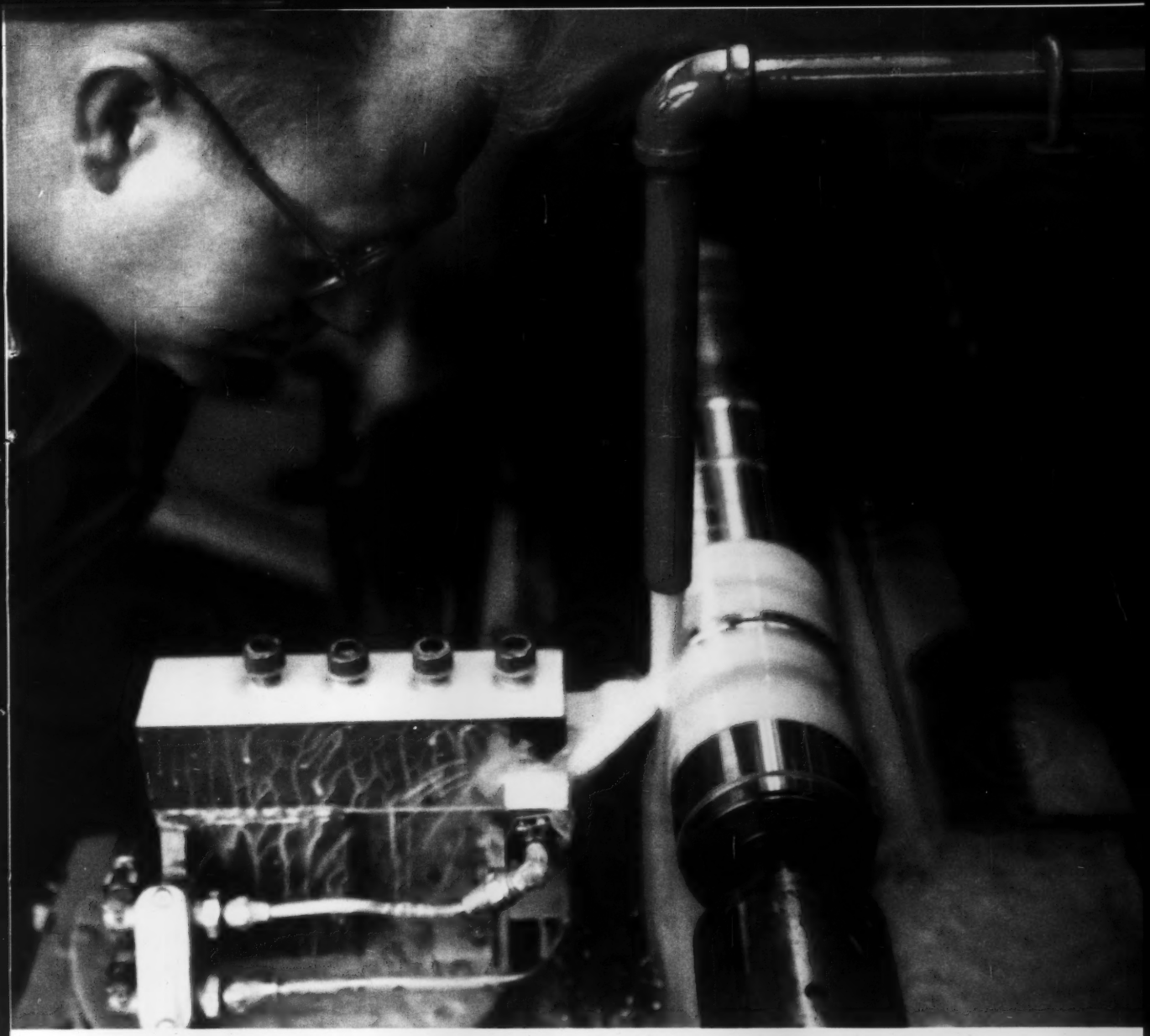
*Reg. Trademark U.S. Pat. Off.

Lectromelt*

McGRAW EDISON

CANADA: Canefco Limited, Toronto . . . ARGENTINA: Master Argentina, Buenos Aires . . . ITALY: Forni Stein, Genova . . . ENGLAND: Electric Furnace Co., Ltd., Weybridge . . . GERMANY: Demag-Elektrometallurgie, GmbH, Duisburg . . . SPAIN: General Electrica Espanola, Bilbao . . . FRANCE: Stein et Roubaix, Paris . . . BELGIUM: S. A. Stein & Roubaix, Bressoux-Liege . . . JAPAN: Daido Steel Company, Ltd., Nagoya

STANDARD SIZES UP TO TWO HUNDRED TONS CAPACITY



Lehmann 18" Hydratrol lathe turning 4" Nitralloy 135 modified bar stock. Tool is K7H carbide nitriding steel. Feed .011", depth of cut .100", speed 300 sfm. Coolant is 20% emulsion of Gulfcut Heavy Duty Soluble Oil.

You can make heavier cuts... at higher speeds...with new GULFCUT HEAVY DUTY SOLUBLE OIL

Norton Type C Cylindrical Grinder grinding SAE 4140 steel connecting rod bolts to 4 micro-inch finish. Speed is 225 sfm, depth of cut .020" with 30" x 1" aluminum oxide wheel. Emulsion concentration 32:1 Gulfcut Heavy Duty Soluble Oil.

This aluminum connecting rod and piston assembly was turned at 4000 sfm to a 6-micron rms finish with Gulfcut Heavy Duty Soluble Oil.

You'll get finer finishes, too, when you use new GULFCUT HEAVY DUTY SOLUBLE OIL

For threading, boring, facing, turning, grooving, grinding, or any operation that requires an emulsifying oil, you'll get better results with new Gulfcut Heavy Duty Soluble Oil. On tough jobs where other general purpose oils have failed, Gulfcut Heavy Duty Soluble meets all requirements—even on low machinability metals.

This new oil is economical, too. An average mixture of 1 part to 25 parts of water provides good cooling and superior lubrication. In many field tests, it has performed well even in mixtures of 1 to 150!

Gulfcut Heavy Duty Soluble Oil won't separate or gum in wheels, slides, ways or other machine parts. It provides greater protection against rust . . . has excellent emulsion stability, even in hardest water . . . has high surface-wetting properties for more effective cooling . . . and contains powerful anti-foam and anti-weld agents. In addition, it contains an effective germicide to help eliminate rancidity.

To improve your production and cut your machining costs, try new Gulfcut Heavy Duty Soluble Oil. For more information, just call a Gulf Sales Engineer at your nearest Gulf office. Or use the coupon on the next page to get illustrated booklet.

GULF

In the complete Gulfcut line, there's a cutting oil to meet your every need

By ordering "Gulfcut" you can select from many different shop-tested cutting oils, including mineral-lard oil, sulfurized-mineral oils, sulfurized-mineral-lard oils, sulfo-chlorinated-lard oils, and emulsifying oils. Your Gulf Sales Engineer will gladly advise you.

GULFCUT 11A AND 11D

Non-staining, non-corrosive mineral-lard oils, recommended for machining non-ferrous metals.

GULFCUT 21A, 21B AND 21C

Sulfurized-mineral oils made by a special Gulf process to provide greater sulfur activity over a wide range of machining operations. They are transparent and relatively light in color.

GULFCUT 31A AND 31C

Sulfurized-mineral-lard oils that excel over a wide range of machining operations on many types of steel. Have outstanding anti-weld properties and load carrying ability. Sulfur is combined in three different forms for maximum chemical activity.

GULFCUT 43A

Sulfo-chlorinated oil for high production machines requiring an oil of this type for pipe cutting and threading, screw and bolt making machines, and cutting operations on steels with free and moderate machinability characteristics. Contains a corrosion inhibitor to protect ferrous metals and machine parts.

GULFCUT 43B

Specially blended sulfo-chlorinated-lard oil for high production machines requiring an oil of its viscosity and compounding. Dual purpose—suitable for machine lubrication as well as for cutting operations.

GULFCUT 45A AND 45B

High quality sulfo-chlorinated-lard oils with excellent load carrying and anti-weld characteristics to insure best results on the most difficult jobs. Have heavy concentrations of sulfur, chlorine and fatty oil. May be diluted for less difficult jobs.

GULFCUT 41A, 41B AND 41C

Sulfo-chlorinated-lard oils for high production jobs on automatic machines. Engineered with the proper combination of sulfur, chlorine and fatty oil. They also provide proper lubrication for machine tools.

GULFCUT 41TG

This is a sulfo-chlorinated-lard oil specifically compounded for thread grinding operations.

GULFCUT SOLUBLE OIL

Emulsifying oil with a wide range of uses in cutting, forming and rolling operations where a coolant with moderate lubricating properties is required. Mixes with warm or cold water as high as 100 to 1. Forms homogeneous and exceptionally stable emulsions.

GULF OIL CORPORATION
Dept. DM, Gulf Building
Pittsburgh 30, Pa.

Yes! Send me illustrated bulletin on

- ☐ Gulfcut Heavy Duty Soluble Oil
- ☐ Gulfcut "Regular" Cutting Oils

Name _____

Title _____

Company _____

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City _____ Zone ____ State _____

SP 9283

GULF

THE FINEST PETROLEUM PRODUCTS
FOR ALL YOUR NEEDS

WORLD'S LARGEST

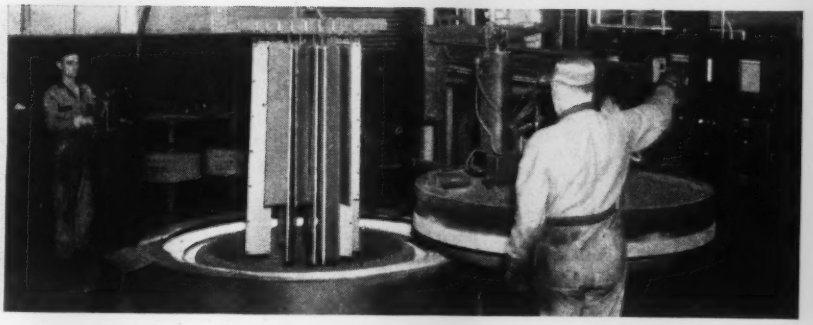
Gas-Fired Homocarb® Furnace Installed

"This equipment took a sizable bite out of our limited expansion capital," says Carl H. Muehlemeyer, President of O. T. Muehlemeyer Heat Treating Company, commercial heat treaters in Rockford, Ill., "but we chose it deliberately after much consideration because we know that with it, we can give our customers the quality and service they require at a competitive cost."

Muehlemeyer points out that, "This furnace is part of a quality-control expansion program extending over the next several years. It reached us from Leeds & Northrup ready for installation with complete instrumentation for Speedomax temperature control and Microcarb atmosphere control."

Only recently has a complete line of gas-fired Homocarb furnaces, equivalent in design, construction and instrumentation to electrically-fired units been introduced. Combining precision control of carbon potential with the economy of gas-firing, these furnaces can be used interchangeably for case carburizing, carbon restoration, homogeneous carburizing or hardening. These factors strongly influenced Muehlemeyer's choice.

A load of SAE 4140 steel slidebars being unloaded from Muehlemeyer's gas-fired furnace. Carbon and temperature control panels can be seen at right. Above is the same furnace . . . measuring 15 feet high by 6½ feet in diameter . . . ready to leave the L&N shipping dock in Philadelphia.



For more information *just write us at 4957 Stenton Ave., Phila. 44, Pa.*

LEEDS *instruments* **NORTHRUP** *automatic controls • furnaces*

How Earl Singleton cut the cost of

With 28 years experience in the abrasives industry, Bay State distributor Earl Singleton figures that one improvement in a grinding operation ought to lead the way to another. And, judging by the results he's produced, he's 100% right.

This is a good example of what happens when you tell a Bay State distributor your problem and give him a chance to experiment.

The problem: Grinding teeth on heavy traction gears for diesel locomotives at the Indianapolis plant of a large manufacturer of components for diesel locomotives.

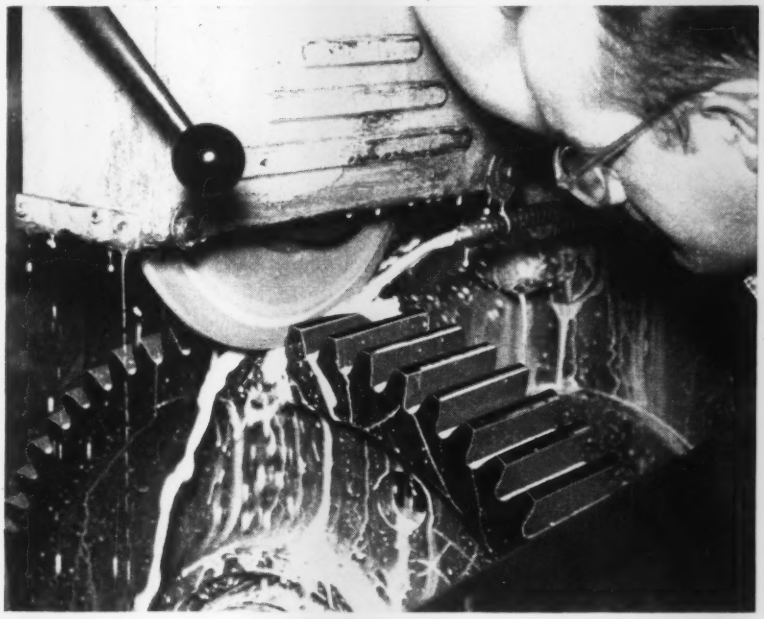
The man: Earl Singleton, Abrasive Engineer at Browning Tool & Supply Co., Indianapolis.

Working with the foreman of the department, Singleton came up with a 14" grinding wheel that cost 14% less than the premium-priced wheel it replaced. It held form better, too, and so didn't need to be dressed as often.

That was fine. But Singleton figured they might also get more pieces per wheel if they used a slightly larger wheel. After exhaustive tests to ensure complete safety, a 15" wheel was put to work and wheel life was more than doubled . . . from 16-17 pieces to 35-36. Down-time was reduced, too.

Even if you seem to have no particular grinding problems at the moment, it's worth while getting acquainted with the Bay State distributor in your area. Like Earl Singleton, he may find ways to save you money that haven't occurred to the people in your shop. *Better grinding at lower cost – that is his business.*

grinding heavy traction gears



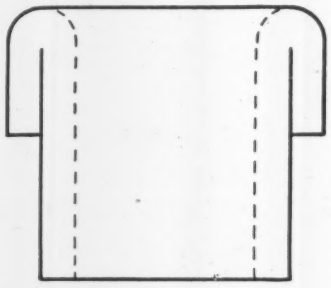
Bay State specification cut wheel cost 14% . . . *and* wheel held form so well that wheel life was doubled under regular production conditions.

BAY STATE WHEELS of PROGRESS

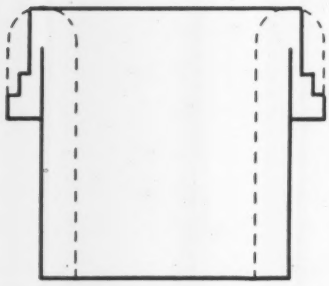
BAY STATE ABRASIVES

Bay State Abrasive Products Co., Westboro, Massachusetts.
In Canada: Bay State Abrasive Products Co., (Canada) Ltd., Brantford, Ontario.
Branch Offices: Bristol, Conn., Chicago, Cleveland, Detroit, Pittsburgh. *Distributors:* All principal cities.

more proof of *Carpenter* quality . . . at no extra cost



Reverse bend is made on one end, doubling the pipe back on itself.



Machining is then performed on the doubled back part of the pipe as shown in photo.

Carpenter Stainless Pipe shows fabrication savings!

Only the highest quality stainless pipe and tubing with outstanding uniformity in properties and dimensions can take this punishing reverse bend (see sketches) and succeeding machining operations. The part is made from 2″ Carpenter Schedule 40 pipe, and must meet close tolerance requirements consistently.

If more of this kind of proof is needed, call your nearest Carpenter Distributor today. He has the service and stock to serve you right!

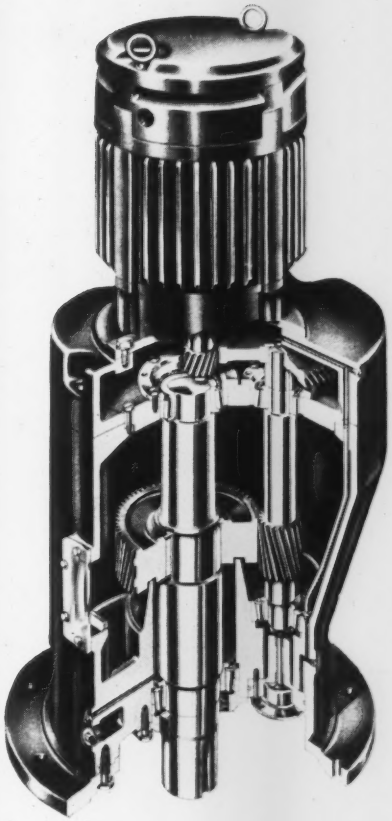
MEMBER

The Carpenter Steel Company
Alloy Tube Division, Union, N. J.

Export Dept.: The Carpenter Steel Co., Port Washington, N. Y.—"CARSTEELCO"

Carpenter

Stainless Tubing & Pipe



new for vertical applications

Compact In-line Motoreducer—Here's real design flexibility. And here's simplification of your drive problems—plus substantial savings in space. The new Philadelphia Vertical Motoreducer offers *straight-through* shaft arrangement, with motor and reducer vertically in line. Result: tremendous adaptability where horizontal motor arrangements or right angle drives are difficult to install. Capacity up to 400 hp with ratios to 86.5:1

Designed to give you quality construction in an inexpensive reducer assembly. Just look at the features . . .

Strength. Rugged cast iron frame. Heavy duty bearing support for superior gear performance and longer gear life. Heavy duty output shafting takes most severe overhung load conditions.

Convenience. All standard motor enclosures available. Multi-speed motors or variable-speed drives can be supplied to provide economical in-motion speed control.

Easy maintenance. First reduction pinion and gear easily accessible for quick replacement. Changes in unit output speed quickly made with stock helical gear sets.

Trouble-free service. Rugged crown-shaved helical gearing assures long, efficient service life. Two-way seals seal out dirt and atmospheric contaminants. Unique Philadelphia dry well construction positively prevents oil leakage down output shaft.

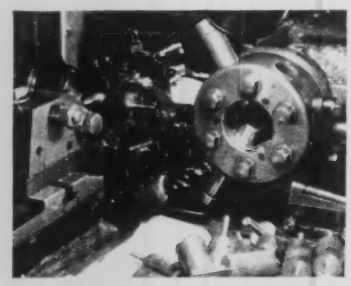
Get full details—no obligation. Write for our new Catalog A-27 or call your nearest Phillie Gear Office. Philadelphia Gear Works, Erie Ave. and G Street, Philadelphia 34, Pa.

Offices in Principal Cities • Virginia Gear & Machine Corp., Lynchburg, Va.

phillie gear®

Short, fast-breaking chips indicate machinability of Rycut 20 —also save time by eliminating problems of chip clearance.

Rycut 20 alloy steel increases rotor output 40%, doubles tool life



Using Rycut 20 bars, Buckeye Tools Corp. machines motor rotors in less than two minutes floor to floor time.

Here's a manufacturer getting 34 rotors an hour compared with a previous 24—plus a 100% reduction in tool grinding.

How? By switching to Rycut 20 alloy steel. The company is Buckeye Tools Corporation, of Dayton, Ohio. A Ryerson alloy specialist recommended Rycut 20 (a low-carbon, lead-bearing alloy) for the rotor of their "Cadet" nibbler, an air-operated contour-cutter used on sheet metal, tubing and plastics.

World's fastest machining alloy steel in its carbon range, Rycut 20 is widely used for gears, cams, spindles, shafts and bearings. Like all other alloys from Ryerson, it carries a Certificate of Analysis and Hardenability which tells you exactly what steel you're getting and what to expect of it. A phone call to a Ryerson steel specialist at your nearby Ryerson plant may bring important cost reductions in your metalworking operations.

RYERSON CERTIFIED QUALITY

RYERSON STEEL

Member of the MIAMI Steel Family

Principal Products: Carbon, alloy and stainless steel—bars, structurals, plates, sheets, tubing—aluminum, industrial plastics, metalworking machinery, etc.

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • WALLINGFORD, CONN. • PHILADELPHIA • CHARLOTTE • CINCINNATI • CLEVELAND DETROIT • PITTSBURGH • BUFFALO • INDIANAPOLIS • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

Metalworking Outlook

Aluminum Output Still Relatively High

Primary aluminum producers have all had to reduce operations, but not nearly to the 52.5 per cent level prevailing this week in steel. Aluminum Co. of America is operating at 76 per cent of its 792,500-ton annual capacity; Reynolds Metals Co. at 95 per cent (capacity, 526,000 tons); Kaiser Aluminum & Chemical Corp. at 80 per cent (capacity, 537,000 tons); Anaconda Co. at 88 per cent (capacity, 60,000 tons); Aluminum Co. of Canada at 80 per cent (capacity, 770,000 tons). Aluminum is doing better than steel because: 1. The light metal was in short supply until early last year. 2. The three major U. S. producers are still tendering metal to Uncle Sam under "put-right" agreements. They amounted to some 150,000 tons last year.

Prospects Less Promising in West

Although Kaiser Aluminum is operating nationally at 80 per cent of capacity, its west coast rate is much lower—50 per cent at Mead, Wash. It will close down two more potlines at Mead and half a potline at Tacoma, Wash., on Mar. 31. One reason for west coast shutdowns: Much of the output is high in cost for Kaiser since it has to be shipped East. With the Ravenswood, W. Va., plant partly running, Kaiser doesn't need the western production to satisfy demand. Look for all producers with west coast plants to run them from now on at rates just high enough to satisfy western demand.

Detroit Wants Retroactive Excise Cuts

Automakers are staunchly behind proposed legislation to cut auto excises—provided the reduction is retroactive to prevent any slowdown in retail sales while the decision is pending. Generally, the excise is about $150 on a low-priced car.

Canada's Economic Weather Cloudy

Canada is suffering a recession, too. Gross national product north of the border managed to climb 3 per cent in 1957, but a 4 per cent price rise during the year wiped out all real gains. Canada's industrial production last December was 6 per cent below the level of February, 1957, and it has declined even more since. As in the U. S., construction continues high in Canada and could lead in pulling the dominion out of its slump.

Why Prices Don't Drop

Why aren't prices dropping substantially? Consumer prices are more than 1 per cent above last August's levels, and wholesale quotations are some

0.6 per cent higher. "The simple arithmetic of wage rates versus productivity makes clear the nature of today's inflation problem," says the National City Bank of Cleveland. Average hourly earnings in manufacturing, construction, and retailing have risen 5 per cent per year during the past two years. But the private sector of the economy improved its productivity only 0.8 per cent in 1956 and 1.8 per cent in 1957. If such a trend continues, says the bank, "business will do everything in its power to resist price cutting in recession year 1958 and in the years to come."

Bright Spots Among Companies

Not all American companies are suffering declines. Examples: Hughes Aircraft Co., Culver City, Calif., plans to employ 3500 more in 1958. Parker-Hannifin Corp., Cleveland maker of devices to control flow of fluids, reports new orders increased in February for the third successive month. Blaw-Knox Co., Pittsburgh, says its "1958 prospects are reinforced by the substantial backlog of orders with which the company entered the year."

Bright Spots Among Industries

And prospects are bright for some industries. Examples: Electronics sales to the government are rising steadily, reaching $967.5 million in 1957's fourth quarter, vs. $926 million in the third quarter. Sales last year to the U. S. hit $3.9 billion and should exceed $4 billion in '58. Toy sales are climbing, too, and should reach $1.65 billion at retail levels in '58, vs. $1.5 billion last year.

'We're Suffering from Surprise'

The gross national product should reach at least $560 billion in 1965, compared with $434.5 billion in 1957, predicts W. P. Carlin, Republic Steel Corp. economist. He adds: "We have strong reasons to anticipate a new growth period for this country" because of a growing population, expanding technology, and the demand for more educational facilities. Even so, we will continue to have our ups and downs. "We had better get used to the idea. We have forgotten that there could be a time like the present slump, and we are suffering from the surprise."

Straws in the Wind

FRB's move in reducing by one-half of 1 percentage point the reserves which member banks must maintain released a potential $3 billion in new funds for lending . . . Material handling equipment orders were 93.07 per cent of the 1954 base in January . . . By 1961, your car will have an alternating current electrical system if one carmaker's prototype pans out . . . John A. Ylinski, executive director of the Niagara Frontier Port Authority, predicts Buffalo would become the nation's leading steel center if its harbor's channels are dredged to 27 ft.

Here's a MARVEL HIGH-SPEED-EDGE Hack Saw Blade we would'nt sell you!

This blade **could** have been packaged and shipped as a genuine MARVEL High-Speed-Edge Blade . . . and it **might** have performed to a customer's satisfaction. Instead, it was rejected and will be scrapped because inspection revealed a minute imperfection.

There's nothing unusual about this. Certainly, other hack saw blade manufacturers inspect their products, and undoubtedly reject blades for one reason or other, because they are trying to market the best blades they know how to make.

And that's the point—here at MARVEL, where the composite blade was invented and perfected over 30 years ago, we believe we know more about making high-speed-edge hack saw blades than any other maker. We've been at it longer, and the unequalled performance of MARVEL Blades on every kind of material is evidence that we're right.

Use MARVEL Blades on your power hack saws with perfect confidence that they have no equal. You can get MARVEL Blades at your nearby Industrial Distributor.

Write for the new MARVEL Cutting Tool Bulletin.

B-1122

ARMSTRONG-BLUM MFG. CO.
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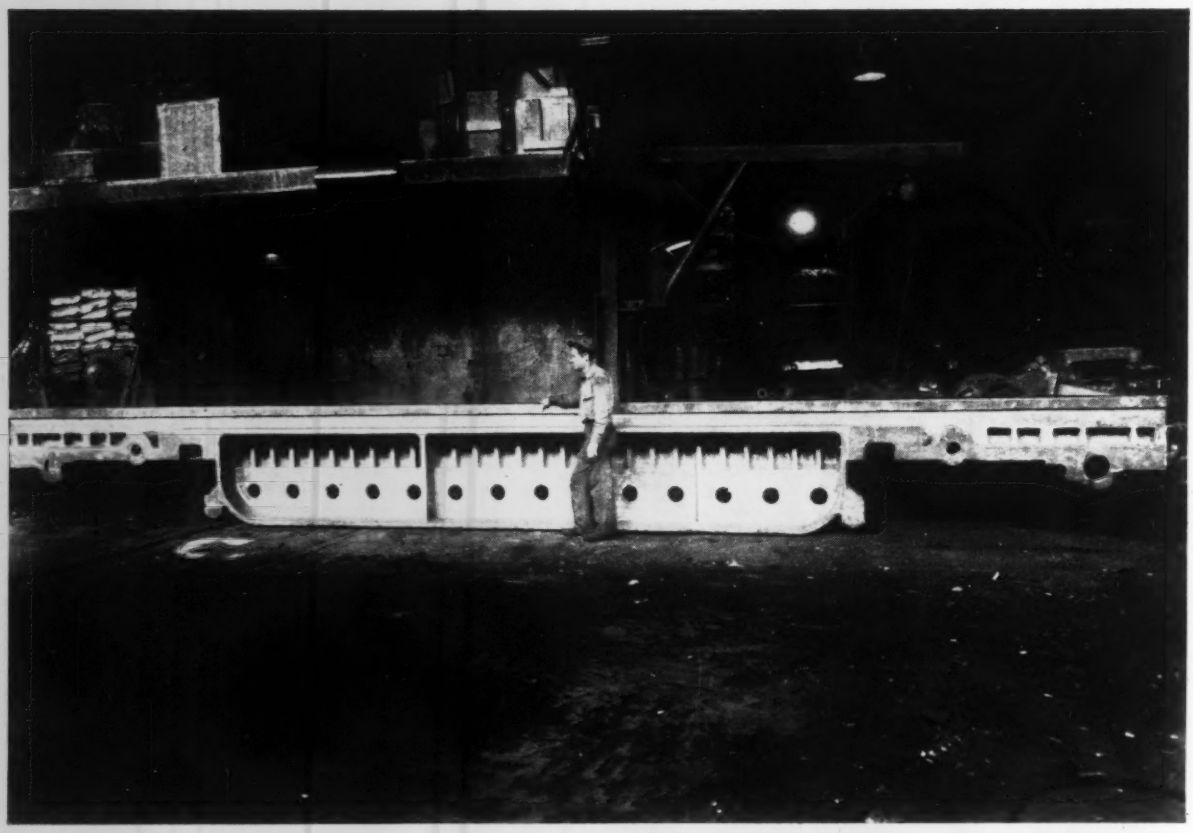
Metal Cutting MARVEL SAWS
Better Machines—Better Blades



Starting point for high-precision, high-production, heavy-duty planers

...an economical ductile iron casting

Here's a 22-ton crossrail casting for a heavy-duty planer that illustrates the high engineering properties of ductile iron.

Ordinary grey irons don't have the rigidity a part like this demands. Yet steels...castings or weldments... overstep acceptable cost levels. Ductile iron has properties that fill the gap between grey irons and steels.

The ductile iron in this crossrail, for example, has a modulus of elasticity of 24 million psi. coupled with elongation in the 3-10% range. That's plenty of rigidity to insure precision milling capabilities in the finished planer. And yet there's ductility enough to provide high impact strength, too. Tensile strength in the 80 to 100 thousand range gives the finished rail muscle enough to handle heavy cuts, high milling speeds.

What about cost?

In one sense . . . the cost of basic materials . . . the cost of this ductile iron is higher than the cost of ordinary grey iron. But practically the difference is negligible. You can see why.

For one thing, castability is excellent. Thin sections adjoining thick are not a casting problem. You don't have to add extra metal to assure casting safety. You are free, too, to cast against a chill to get an abrasion resisting surface. You can harden by flame or induction. Machinability is excellent.

Other basic types of ductile irons

There are four other basic types of ductile irons in addition to 80-60-03 and there is also a basic heat resistant ductile iron composition. Each is a specific for particular types of castings. Make sure you know the capabilities of these ductile irons. Write for Inco's 28-page booklet, "Engineering Properties and Applications of Ductile Iron."

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street INCO New York 5, N. Y.

D ductile iron...the cast iron that can be twisted and bent.

Take Lid Off Spending

One of the most distressing aspects of the current economic situation is the way management is holding back on essential spending for plants, equipment, and supplies because of apprehension over business.

Such spending is dropping at a rate faster than most people thought it would.

The president of an organization with a dozen clients in industry tells us that $30 million in proposals are being frozen by management.

The money is not earmarked for long range capital improvements but for equipment and supplies needed now for efficient operation, product improvement, and cost reduction.

Projected on a national basis, it is estimated that $10 billion to $15 billion in orders have been approved and are ready to place. But management is refusing to budge.

We do not believe this freeze on spending is justified by the facts.

As measured by the Federal Reserve Board's Industrial Production index, activity is down but not as much as scare headlines would have us believe.

At 130 in February (1947-49 = 100), the index is off 17 points or 12 per cent below the high of December, 1956. But it could drop another half dozen points, and we would be no worse off than we were in 1954; a decline of 33 points would still put us even with 1949.

Further analysis shows that the downtrend is concentrated in hard goods where industry is still chewing up inventories of steel and other metals. Soft goods are off hardly at all.

Perhaps the FRB index will go down a few more points before it again heads upward. But head upward it will as soon as the stimulants now at work really take hold.

Don't forget that while 5.2 million Americans are out of work, 62 million still have jobs; that upward wage trends are completely insensitive to other changes in the economy; and that before too long the government again will be worrying more about inflation than making jobs for people.

Industry has the continuing problem of surviving the rising tide of costs and competition from new and better products.

Management needs to take the lid off spending and start preparing for the not-too-distant future.

Irwin H. Such
EDITOR-IN-CHIEF

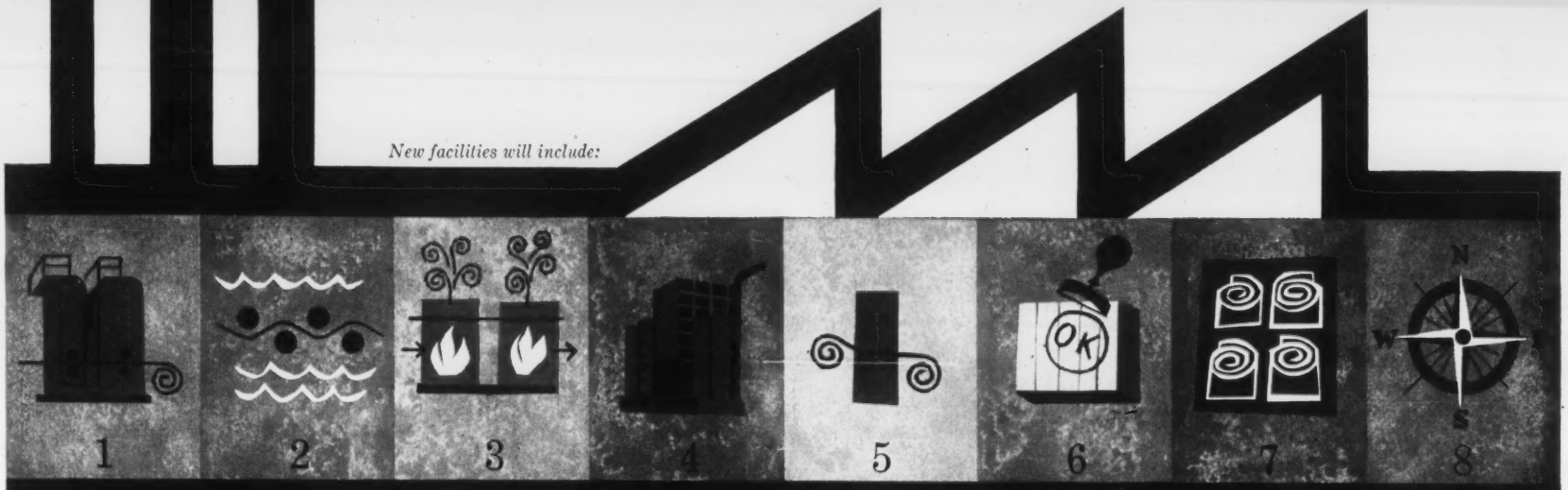
MEASURING UP TO YOUR FUTURE NEEDS...

Inland will soon provide a 50% increase in cold rolled sheet and strip capacity... By the end of the year, Inland will add close to a half million tons to its existing capacity for cold rolled sheet products. The increase in cold rolled sheet production was the main purpose behind Inland's current expansion program which will bring total yearly steel-making capacity up to 6,000,000 ingot tons next year.

The expansion project, launched in late 1955 and now nearing completion, is in keeping with Inland Steel's continuing policy of anticipating future needs of steel users in the fastest growing steel consuming area in the country . . . the Midwest.

Inland's new cold rolled sheet mill, housing the most modern equipment available for the production of uniform, high quality cold rolled sheets and coils, will be one of the fastest and most efficient mills of its type in existence.

New facilities will include:



1. 4-stand tandem cold reduction mill
2. Pickling line
3. Continuous normalizing line
4. Annealing furnaces
5. Temper mills
6. Finishing department
7. Coil storage
8. Shipping department

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Partmaking Prospects at a Glance

ORDERS— They're off an average of about 25 per cent from year-ago levels. Many report levels below those of the fourth quarter. Most improvements are slight.

SHIPMENTS— They held up longer than new orders, feeding on backlogs. But now they're below fourth quarter levels and may go lower unless orders perk up.

DELIVERIES— In many cases, leadtime has shrunk to that required to process the order and produce the component —or less. Two and three days is common.

INVENTORIES— Partmakers feel the shorter the delivery time, the less the customer has in stock. They're convinced inventories are about as low as they can get.

INQUIRIES— This is the brightest spot in the outlook. There's a lot of price shopping, but most producers feel a good portion of them will be turned into orders.

BACKLOGS— Many partmakers don't ordinarily have backlogs. Those who have backlogs report they are practically gone.

EMPLOYMENT— Most manufacturers think the bottom has been hit. Some are recalling help; others are lengthening hours.

PRICES— In about half the industries checked, there is some price cutting. Few admit it—it's always the other guy. Few like it, but it gets an occasional order.

Parts: Are Inquiries Enough?

Component makers are pinning their hopes for a recovery on the increased traffic through their quotation departments. But declining shipments and vanishing backlogs worry them

"IF PURCHASING AGENTS would release for shipments only 25 per cent of the orders they are reasonably sure they will need within the next few months, we'd have this recession off the ground in no time," says H. A. Daschner, managing director of the Pressed Metal Institute.

Predominant Feeling—Almost all component makers feel the same way. Perhaps it's because inquiries are about the only tangible thing they can pin their hopes on. What improvement they have seen in new orders so far this year has been slight, with few exceptions. "But there are more signed orders without delivery dates now than I have seen in six months," continues Mr. Daschner. "If they all come up for delivery at about the same time, delivery times will lengthen fast, and some PAs will find they can't get parts in time to meet their own schedules."

The significant increase in inquiries throughout component industries is indicative of the cautious attitude many buyers are taking. Most manufacturers believe that some quotations are simply price

checks. But one official in the screw machine industry says that the high rate of order returns from current inquiries shows that more than price is involved. Some partmakers declare that if only 20 or 25 per cent of their quotations result in orders this spring, they will be busier than they have been for months.

Quick Reaction — Practically all component industry officials contacted by STEEL last week are convinced that the inventory liquidation has run its course. "Some of our customers can't cut stocks any farther without going out of business," one says.

Suppliers of raw materials say component makers are equally guilty of going too far in this direction. A metal supplier to nonferrous foundries declares that inventories of both finished castings in the customers' factories and of metal in the foundries are so low that any sudden pickup anywhere along the line would result in a "gosh awful rush for metal."

Something New—Several sales officials are encouraged by the fact that many inquiries and some new orders are coming from new product developments—things they have never quoted on before.

Here is the consensus of officials in several component industries:

Diecasters—Sales are down about 25 per cent so far this year. Hopes for an upturn rest with the auto industry. If this business picks up, 1958 could be about as good as 1957. (See STEEL, Mar. 17, p. 152.)

Electric Equipment, Motors — Business conditions in this industry are better than in most of those surveyed. One of the largest makers of switches says dollar volume so far is on a par with that of the corresponding period last year, although unit volume is down. Cutler-Hammer Inc., Milwaukee, notes increased activity in steel mill, blast furnace, and ore bridge markets. Other fields to show signs of revival are commercial construction, business machines, missiles and other defense applications, and electronic computers.

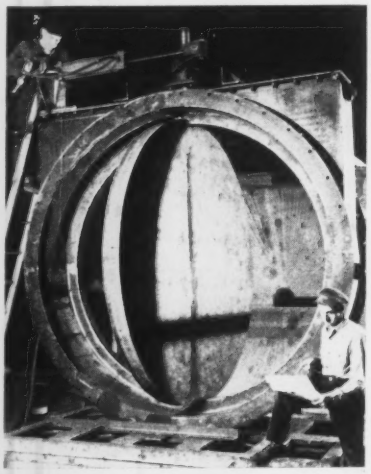
Electronic Parts—Business is up slightly since Jan. 1, and manufacturers expect more improvement by midyear. But even with a stepup in the missile program, some observers doubt that 1958 will equal 1957.

Fasteners—"The automobile industry with its tight inventory control programs has created pure hell in the fastener industry," says one sales vice president. Sales are off 25 to 30 per cent so far this year. But inventories are moving down (they're about 25 per cent lower than they were in the fourth quarter), and the number of "serious" inquiries has nearly tripled, says one manufacturer. Employment is about as low as it will get and may start back up soon.

Forgings—This is one of the two industries surveyed which has had no significant improvement in inquiries this year. Business is off 40 per cent for the industry, but one official indicated that a slight upturn started in January. Prices have dropped about 6 per cent since Labor Day, says one vice president, and there is no assurance that price cutting has stopped.

Foundries—Gray iron and nonferrous foundries note a slight pickup in new orders in the last few weeks. Some executives say that March is shaping up better than the preceding two or three months, which were terrible. Arwood Precision Casting Corp., New York, has seen an upturn in the last two weeks, and officials expect it to continue at least for three months.

But steel and malleable iron casters report that business is still as slow as it was in the fourth quarter. Even inquiries are generally slack now. Founders are placing their hope on the feeling that inventories —both theirs and the customers'— are as low as they will get. One nonferrous founder says, "Our inventory is on the tailgate of our supplier's truck." Price cutting is mentioned more in this industry than in most others surveyed.



BUTTERFLY VALVES are being installed in Jones & Laughlin Steel Corp.'s basic oxygen furnace process at Aliquippa, Pa. Built by the Equipment Div., Blaw-Knox Co., for Kaiser Engineers, they are a part of the dust collection and gas cleaning system. Two of these 8 ft 6 in. valves will be used to handle 235,000 cfm of gas at 500° F

Gears—The outlook here is pretty encouraging. Although orders are off about 15 to 20 per cent from those of a year ago, many members of the American Gear Manufacturers Association expect a pickup in the second half to make 1958 equal to 1957. Inquiries are high, and the conversion into orders is strong on the West Coast. In the East, the pickup is a little slower. Generally, employment has been well maintained, but hours have been cut from 50 a week to about 30 to 35.

Screw Machine Products—Usually, this industry notices a significant pickup in the first quarter. This year has been mild by comparison. But inventories are so small that any pickup in the general economy will be felt almost immediately by this industry, members feel. Employment is down about 10 per cent from what it was a year ago, and the workweek is down to about 40 hours (normal for this industry is above 50).

Springs—One thing that bothers this industry is the use of less springs per car in the auto industry this year. Customers' inventories must still be trimmed before there will be much increase in ordering. But the decline in ordering is tapering off, and the rising number of inquiries gives producers hopes for an early turn of the trend.

Stampings—The shops most dependent on the auto industry are the ones showing the least activity. But those with other business, such as appliances and material handling equipment, are noting signs of a pickup. One such shop in Detroit says orders are 15 to 20 per cent above the fourth quarter mark. Inquiries are unusually high.

Wire Shapes—Orders are off 15 to 20 per cent, but inquiries are up sharply. Price cutting is increasing. One maker anticipates a sharp rise in orders prior to the anticipated steel price increase.

Melt and Mill Capacity Rises, but . . .

Titanium Sponge Producers	Annual Capacity (Approximate tons)
Titanium Metals Corp. of America	7000
Electro Metallurgical Div., Union Carbide Corp.	7500
E. I. du Pont de Nemours & Co.	5500
Dow Chemical Co.	1800†
Cramet Inc.	6000*
Mallory-Sharon Metals Corp.	5000‡

Titanium Mill Products	Annual Capacity (Tons)
Mallory-Sharon Metals Corp.	3500
Rem-Cru Titanium Corp.	3500
Republic Steel Corp.	3000
Titanium Metals Corp. of America	6000
Total	16,000

†Went on standby basis last year.
*Plant is being returned to government.
1. Comes on stream in May.

Titanium Demand Drops

Sponge producers are operating at 25 to 30 per cent of capacity, mills 15 per cent. Probably only two firms are making sponge now; Cramet withdraws completely

THE DRASTIC drop in demand for titanium sponge has prompted a major producer, Cramet Inc., to get out of the business (see STEEL, Feb. 10, p. 37).

Now owned by Republic Steel Corp. and Crane Co., it will turn its plant over to the government through the General Services Administration.

Founded in 1953, the firm (using a $25 million government advance) built the facility at Chattanooga, Tenn., with capacity to produce 6000 tons of sponge annually.

Reversed Itself—Says Dr. P. W. Bakarian, Cramet's president: The plant would now be working at full capacity had the government's needs continued at the level prior to May, 1957.

But consumption of sponge dropped from 4013 tons in 1957's first quarter to 2831 tons in the second three months, and to 1161 tons in the third period.

"Military requirements are expected to be lower in 1958 and 1959 than they were in 1957," asserts Dr. Bakarian. But producers don't expect commercial uses to develop fast enough to make up for defense cutbacks.

Stumbling Block—A big barrier to civilian use is price. Sponge sells for $2.25 a pound; the composite price of mill products is $10.55 a pound.

Shipments of mill products are pegged at 200 tons a month through 1958's first half. The Business & Defense Services Administration estimates second half shipments at 300 tons per month. That puts the 1958 total at 3000 tons (vs. 16,000 tons of capacity) and represents an annual operating rate of 20 per cent of capacity. The current rate is 15 per cent.

While the Cramet facility will be phased into retirement within a few weeks, Republic Steel Corp. will stay in the titanium business with its Canton, Ohio, mill. The company is still confident of long range growth in nonmilitary demand.

Missiles use a lot less titanium than aircraft, although this market is expected to increase. Example: Convair Div., General Dynamics Corp., will use a titanium alloy to make helium storage bottles in the Atlas ICBM. The alloy is produced by Titanium Metals Corp. of America.

Sponge Production—It is believed that only two firms are actively making sponge—Electro Metallurgical Div., Union Carbide Corp., and TMCA. A Du Pont spokesman said his company is selling sponge but refused to confirm or deny rumors that it is not producing.

Dow Chemical Co.'s plant was put on standby last year. Mallory-Sharon Metals Corp. will bring its 5000-ton-a-year plant at Ashtabula, Ohio, on stream in May. Initial production will probably be about 30 per cent of capacity.

Electromet says it plans no further production cutbacks now. It will continue deliveries of sponge to the government this year under a stretchout agreement. A spokesman says the company is in the titanium business to stay.

Depreciated Steel

Unrealistic taxes hurt entire economy, U. S. Steel charges, adding: The efficient are penalized

THE DIFFERENCE between the expense of replacing equipment and the depreciation allowed cost U. S. Steel Corp. over $650 million between 1940 and 1957. The sum was called corporate income and taxed by the government.

That and other inequities of the tax system were singled out by U. S. Steel in its 1957 annual report.

Hits Incentive—The corporation charges that the taxation of corporate income impairs production incentive and progress. Reasons given: For every dollar of profit for dividends or reinvestment at present tax rates, more than a dollar must be paid in taxes. On top of that, says the corporation, the company that operates more efficiently pays a higher tax per production unit. U. S. Steel's net income in 1957 was $419.4 million; its taxes came to $525.2 million.

Stops Growth — The corporation also contends that income needed for reinvestment in business is dissipated in taxes. This money, it says, is needed for the industrial growth on which more than three-fourths of all nongovernment wages and salaries depend. U. S. Steel's expenditures for additions to facilities and replacements totaled $514.9 million in 1957, vs. $311.8 million in 1956.

Special Ships for the Seaway?

"Although many present lake vessels can use the seaway as far east as Anticosti Island and numerous ocean vessels can come into the lakes, several specialized types of ships may be more suitable for seaway operations."—Hugh C. Downer.

	General cargo for lakes, seaway & ocean	Bulk for lakes, seaway & ocean	Bulk for lakes & seaway
Length between perpendiculars	440 ft	595 ft	714 ft
Beam	70 ft	72 ft	72 ft
Draft loaded, fresh water	25½ ft	25½ ft	25½ ft
Draft loaded, salt water	29 ft	29 ft	
Cargo deadweight (capacity):			
Fresh water	6000 long tons	14,700 long tons	23,000 long tons
Salt water	8700 long tons	19,400 long tons	
Cubic capacity (cargo)	540,000 cu ft	910,000 cu ft	780,000 cu ft (ore) 950,000 cu ft (other)

Source: Hugh C. Downer, president, H. C. Downer & Associates Inc. (marine architects), and executive vice president, Wilson Marine Transit Co.

Politics Trouble Seaway

THE ST. LAWRENCE Seaway Development Corp., Uncle Sam's four-year-old agency which has the job of providing the gates to a fourth seacoast, will transfer its headquarters from Washington to Massena, N. Y., in time for the formal opening of the seaway in July.

Over 85 per cent of the $93 million worth of contracts awarded by the corporation are completed. Ships with a 14-ft draft will flow through the seaway in 1958. The Canadians must complete their work before ships with a 27-ft draft can move in (probably when the ice breaks up in 1959).

Problems—Corporation officials will take some headaches to Massena: 1. How high should tolls be set? 2. Is the Budget Bureau providing money fast enough to complete the connecting channels by 1962? 3. Will traffic after connecting channels are completed enable the corporation to liquidate its debts in 50 years and maintain the seaway in proper repair?

Toll Question—The corporation reads the legislation from Congress (the Wiley-Dondero Act) in its strictest sense: The seaway is a self-liquidating proposition. In 50 years, revenues from tolls must pay off the $140 million authorized by Congress to build it, the $2 million a year it will cost to maintain it, interest on borrowed money.

Groups which might be expected to favor a pay-as-you-go plan include the Association of American Railroads and organizations representing eastern and gulf ports. They oppose any suggestion that tolls be lower in the first years to encourage business. But prospective user groups think enticement might be needed.

Bulk and General Cargo—Disagreement on the relative weighting of tolls for bulk and general cargo is another sore point. The Lake Carriers Association expects 80 per cent of the traffic to be bulk cargo (iron ore up the lakes; wheat down), so it advocates a seaway "as toll-free as possible." Otherwise, shippers may not change their shipping patterns. Another factor: Ice will keep the seaway closed for over three months a year.

Finally, while the seaway itself could handle up to 55 million tons of cargo yearly, the Welland Canal, Canada's link between Lakes Ontario and Erie, will limit traffic to 40 million to 50 million tons a year.

Channel Costs—"The Midwest and the nation will be deprived of seaway benefits unless funds are speeded for work on connecting channels," believes Sen. Charles Potter (R., Mich.). The lag could amount to three years, he claims, unless the Budget Bureau speeds up funds. (Congress sponsored legislation for the connecting channels in 1956. Including the fiscal 1959 budget, the bureau has authorized the Corps of Engineers to spend $36 million of the $141 million total Congress expects them to cost.) Senator Potter guesses that $35 million should be spent on channels in fiscal 1959 instead of the $18 million planned so that the channels can be completed on schedule in 1962.

As problems boil in Washington, St. Lawrence Seaway Development Corp. might be killed, its program given to the Corps of Engineers. The corporation is submitting its case to Congress. After the toll question is settled (within 60 days, says the corporation), there will be an attempt to hand the seaway to the Commerce Department, some say.

Outlook—Expect the seaway to get off to a slow start. Tolls charged will probably combine a fee for registered tonnage of the ship plus another fee for cargo. Fees will be subject to public hearing.

It's likely Senator Potter will get his wish on speeding up the channel work.

To Thwart Organizing Attempts . . .

Improve Your Whitecollar Relations

_____ Keep salaries and benefits comparable to area and industry averages.

_____ Provide the whitecollar employee with a satisfactory grievance mechanism.

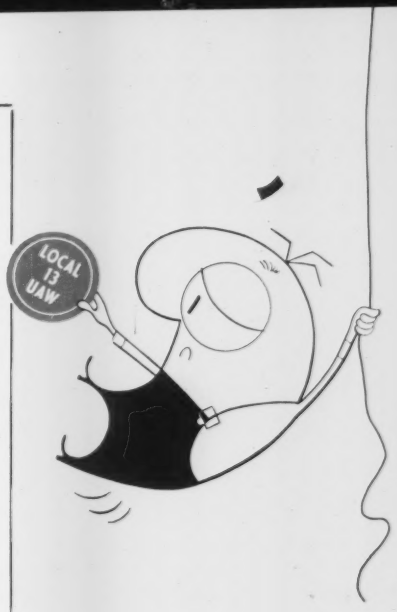
_____ Maintain a promotion-from-within policy.

_____ Set up an equitable program for dealing with personnel displaced by automatic equipment.

_____ Provide educational and training opportunities.

_____ Establish a periodic merit review program, particularly for the professionals like engineers and accountants.

_____ Pay attention to status and personal recognition factors, especially for the professionals.



Whitecollar Drive To Resume in '59, '60

YOU'VE GAINED another year's grace from any full-blown union attempt to organize whitecollar personnel. Major reasons:

1. Unions, particularly the United Auto Workers, will have their hands full with major contract negotiations this year.

2. Washington's labor hearings are still highlighting union abuses—a blow to most organizing drives.

3. There has been a split in the Engineers & Scientists of America and a rival group is being organized.

Be Prepared—But management has no reason to lower its guard. Whitecollar workers, including such people as engineers and accountants, are still a major target for the union. Now is the time to be checking your personnel relations to determine where whitecollar loyalty would rest if the union came knocking tomorrow.

Union efforts to organize the whitecollar employee will pick up momentum next year and in 1960. Their target: About 18 million engineers, technicians, office workers, retail clerks, teachers. The urgency was pointed up by Howard R. Hague, vice president of the United Steelworkers: Steelworkers must get on with the task of organizing whitecollar employees or face the unprecedented situation of being eventually outnumbered at the bargaining table. The number of office and technical workers has increased 52 per cent in the last 11 years, compared with a gain of 5 per cent for production and maintenance workers.

Union Scoreboard—Here are the major whitecollar unions, their estimated memberships, and activities:

• United Auto Workers claims nearly 100,000 members in its office, engineer, and technical groups. UAW whitecollar organizing activity will be at a minimum this year.

• United Steelworkers Office & Technical Workers unit has about 40,000 members, including engineers, accountants, office and clerical employees. USW's organizing efforts are being stepped up. A whitecollar drive kick-off conference was staged recently in District 7 (Philadelphia), and rumor has it that Jones & Laughlin Steel Corp. will be the first target.

• Engineers & Scientists of America has an estimated 25,000 members. At its convention last May, confliet among rival factions resulted in several units withdrawing. Those remaining limit membership to professional engineers and scientists. Major units are in Western Electric Co., Radio Corp. of America, Boeing Airplane Co., Douglas Aircraft Corp., Continental Can Co.

• Engineers & Scientists Guild is the group which splintered from the ESA and represents about 18,000. Major units are in Convair Div. of General Dynamics Corp., Sperry Gyroscope Co., a division of Sperry Rand Corp., plus several architect and engineer groups on the West Coast. Still a provisional organization until ratification by all units, ESG will represent both professional and technical employees.

• American Federation of Technical Engineers has 12,000 members, representing engineers and technicians in about equal numbers. Another AFL-CIO unit is the Office Employees International Union with 50,000 members—all are nonpro-

fessionals. Firms the OEIU has organized within the last year include Fairchild Engine & Airplane Corp.'s Speed Control Div., Sperry Rand's Remington Rand plant at Tonawanda, N. Y., and Joy Mfg. Co. Both groups are stepping up their organizing activities.

How can you counter union efforts? Three key areas demand emphasis: Salary and benefits, personal recognition and status, security and opportunity.

Salary, Benefits—It's not too difficult for unions to make a good case on this point: Wage differentials once enjoyed by whitecollar have been narrowed (even eliminated) through the organization of production workers. They can also point out that many fringe benefits whitecollar workers have were won for them through union efforts.

Make sure your salaries and benefits are average or above those of your industry and area. The accompanying salary schedule is fairly typical in the steel industry. To it should be added 12 cents per hour as a cost-of-living allowance.

Consider establishing salary ranges for each job rather than keeping a single salary for each classification. Whitecollar employees are basically more individualistic than production workers, and salary ranges permit an opportunity to reward the above average employee. There are indications that the unions (OEIU particularly) will be pushing for salary rate ranges with automatic progression increases based on service. The step beyond that will be guaranteed promotional progression.

Security, Opportunity — Unions are pouncing upon office automation as a threat to whitecollar job security. An employee's vote in a certification election can be influenced by how you handle displaced personnel, whether you train employees, or recruit skills from the outside to operate the equipment.

If a union organizes your whitecollar employees, chances are good that you'll be saddled with contract clauses which give the union a voice in whether equipment can be installed and who should be trained to operate it. (Emphasis is on seniority rather than ability.)

Merit Review—It's only human to want a periodic report on "how am I doing?" It's one of the reasons more firms are setting up review programs for whitecollar employees, particularly the professionals. The programs are excellent communication tools to demonstrate your interest in the employee as an individual.

Also, provide an adequate grievance mechanism. Protection for the individual is one of the union organizer's trump cards. Too many firms do not have a specific written grievance procedure. Most executives agree that all individuals should have the right to appeal problems beyond their immediate supervisor.

Status, Recognition—These factors become more important in the middle and upper levels of the whitecollar group. They can range from the elimination of time clocks for salaried personnel to paid memberships in professional societies for engineers and accountants. And engineers object to being assigned non-engineering duties which could be done by technicians and service assistants.

Easiest targets for the unions are plants in which production and maintenance workers are already represented. Those are the unions' first objectives, so check there first when reviewing your whitecollar relations. Home and administrative offices pose tougher obstacles for the unions because of the closer contact between employees and top management.

Most important: Don't wait to put your house in order. A Cleveland firm found the going tough in 1956 and let its whitecollar salaries drop below area averages. It was also forced to make some cutbacks. "We were aware it created an uneasy situation," one executive laments. "And we intended to do something about it. But the UAW was quicker. It moved in, pounced on the wage and job security angle, and won an election the following May."

• An extra copy of this article is available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.

How do your salaries compare?

Whitecollar Salaries in Basic Steel

Effective July 1, 1958*

Job Title	Job Class	Monthly Salary
Messenger, file clerk	1	$340.65
Typist	2	364.85
Stenographer	3	389.05
Payroll statistical clerk	4	413.25
Accounts payable clerk	5	437.45
Detail scheduler	6	461.66
Senior tabulating machine operator	7	485.86
Schedule clerk	8	510.06
Senior cost clerk	9	534.26
Layout draftsman	10	558.46
Construction inspector	11	582.66
Field engineer	12	606.87
Senior draftsman	14	655.27
Design draftsman	15	679.47

Source: United Steelworkers of America.
Job class No. 13 has not been benchmarked.
*Salaries include automatic increase which goes into effect July 1.

More Foreign Licenses

It's a middle approach between exporting and direct investment abroad. To many companies, it can be useful as an extra way to increase revenue and knowhow

SPREADING NATIONALISM and the desire of some foreign countries for rapid industrialization and technological development have been contributing factors in the postwar growth of the licensing agreement as an approach to markets abroad, says the National Industrial Conference Board.

In a survey by NICB covering 240 U. S. and Canadian firms, 131 report they have one or more licensing agreements. About 60 per cent express satisfaction and consider licensing an effective (but not necessarily the most effective) way of developing foreign markets. Some 30 per cent report qualified approval "under certain conditions," and the remaining 10 per cent oppose licensing if any alternative is available, or consider it ineffective in developing foreign markets.

Middle Approach—Licensing is an alternate route between exporting and direct investment abroad. To most participating companies, it is not a chief or preferred approach to foreign markets but a supplement for selected market areas.

By leasing patents, trademarks, or knowhow to foreign manufacturers, many firms have increased their revenue, gained some advantage in overseas marketing, and acquired reciprocal knowhow and research developments from foreign countries.

Growth—Although there are exceptions, licensing is a relatively new development. The majority of firms surveyed had no licensing experience before 1945. Since then most have added three or more new agreements yearly.

Few companies have separate licensing units or even full-time licensing directors. Policy and contract decisions are usually handled by top management officers and committees. Administrative responsibility is delegated to the export manager or to a director of overseas operations.

Centralized direction and control over licensing and other foreign operations are generally recommended by firms with experience. They also believe competent legal counsel is a must before concluding agreements if antitrust action is to be avoided.

Successful Licensing — Good licensing decisions can be made only in light of the company's own situation. Factors contributing to success include: A reliable and compatible licensee; advance research and understanding of the market area; mutual confidence and respect for each other's interests and objectives; a technical and research margin in favor of the licensor; and flexibility of approach and administration.

Failure can come from: Inability to control production costs, quality standards, or other aspects of licensee operations; uncertainty concerning antitrust laws; and competition from licensors with better-known trademarks or more complete product lines.

Trends—About 60 per cent of the companies polled are planning to increase their licensing operations; 20 per cent plan no change; and 20 per cent expect their licensing to decline.

Look for: Increasing interest in equity participation, with majority control or ownership the eventual goal; a greater infusion of merchandising or management knowhow into licensing arrangements; more crosslicensing arrangements based on combining U. S. rights and knowhow with foreign capital and management; a gradual shift from a licensors' market to one in which foreign licensees will have an improved bargaining position; increased competition for U. S. manufacturers from foreign licensors.

(For more on other foreign income possibilities, see Page 73.)

A FIFTH ELECTRIC FURNACE is going in the addition being erected at U. S. Steel Corp.'s Duquesne (Pa.) Works. The third 83-ton unit, it will increase annual capacity by 75,000 tons. The crew is from the corporation's American Bridge Div., contractor for the project

Is Anyone Left To Hold Budget Line?

LESS THAN a month ago, the President signed the bill authorizing a $5-billion increase in the nation's debt limit. He signed it after five weeks of debate by Congress and many citizens. Since then, events have moved swiftly. Practically all news with a Washington dateline these days mentions the big tax cuts to come in time to stop the recession and in time to help in the November elections.

Most observers see a deficit in the fiscal 1959 budget running $10 billion to $15 billion if the tax cuts are made. That's two to four times the deficit anticipated less than three months ago when the President submitted his original budget. It's also the deficit we might have had if the recommendations of either the Gaither or Rockefeller reports had become the nation's gospel.

We didn't buy such a deficit to answer Russia's sputnik: Will we do it as an antirecession move? A quick analysis of the Congressional temper shows: Republican leadership is not as certain about tax cuts as Vice President Nixon is in his speeches. Treasury Secretary Robert Anderson thinks we need more time to decide. Sen. William Knowland (R., Calif.) favors waiting until summer. Sen. Styles Bridges (R., N. H.) flatly states he is not committed either way, yet.

1960's Defense Budget Will Prevail

On the other side, Sen. Harry Byrd (D., Va.,) remains a powerful figure determined to hold the budget line. (He fought to restrict the debt ceiling increase to $3 billion.) Rep. Sam Rayburn (D., Tex.) favors public works spending before tax cuts. Sen. Lyndon Johnson (D., Tex.) is waiting to be caught by the more powerful current, it seems: "I haven't talked to many people who are" for a tax cut.

Most of those men have their eyes on the fiscal 1960 defense budget. If they committed themselves to a deficit of $15 billion (including major increases in public spending and a big tax cut) it might easily go to $20 billion when the last defense dollar was counted.

STEEL was told last week that the Pentagon will come in for a defense budget of over $45 billion in fiscal 1960. That's assuming present plans (for second generation missiles, more B-52s, B-58s, and B-70s, and spacecraft) develop as rapidly as it now seems possible. If the administration denies the money, the Pentagon is prepared to get it from Congress, assuming new Russian successes provide the necessary psychological push.

Of note, too: The Federal Reserve Board continues to try its own brand of recession medicine by easing the credit situation. Behind the scenes in Washington, the FRB's moves are considered much more significant than tax cut talk.

Prediction: We'll forego tax cuts to pay the bigger defense bill.

Housing Revival Will Take Hold

Although housing starts were down in February, applications for Federal Housing Administration insured loans for new houses jumped 70 per cent over the February, 1957, figures. (January, 1958, applications were up 64 per cent over January, 1957, applications.)

February's volume was 20 per cent better than January's, notes FHA Commissioner Norman Mason. The housing industry generally expects to see starts increase by 200,000 this year with the passage of the new housing bill. It provides for increased GI loan rates, an additional $1 billion for the Federal National Mortgage Association (Fanny Mae) purchases of FHA and GI mortgages, plus other measures for urban development, military housing, and direct government loans.

Defense Orders Are Scheduled

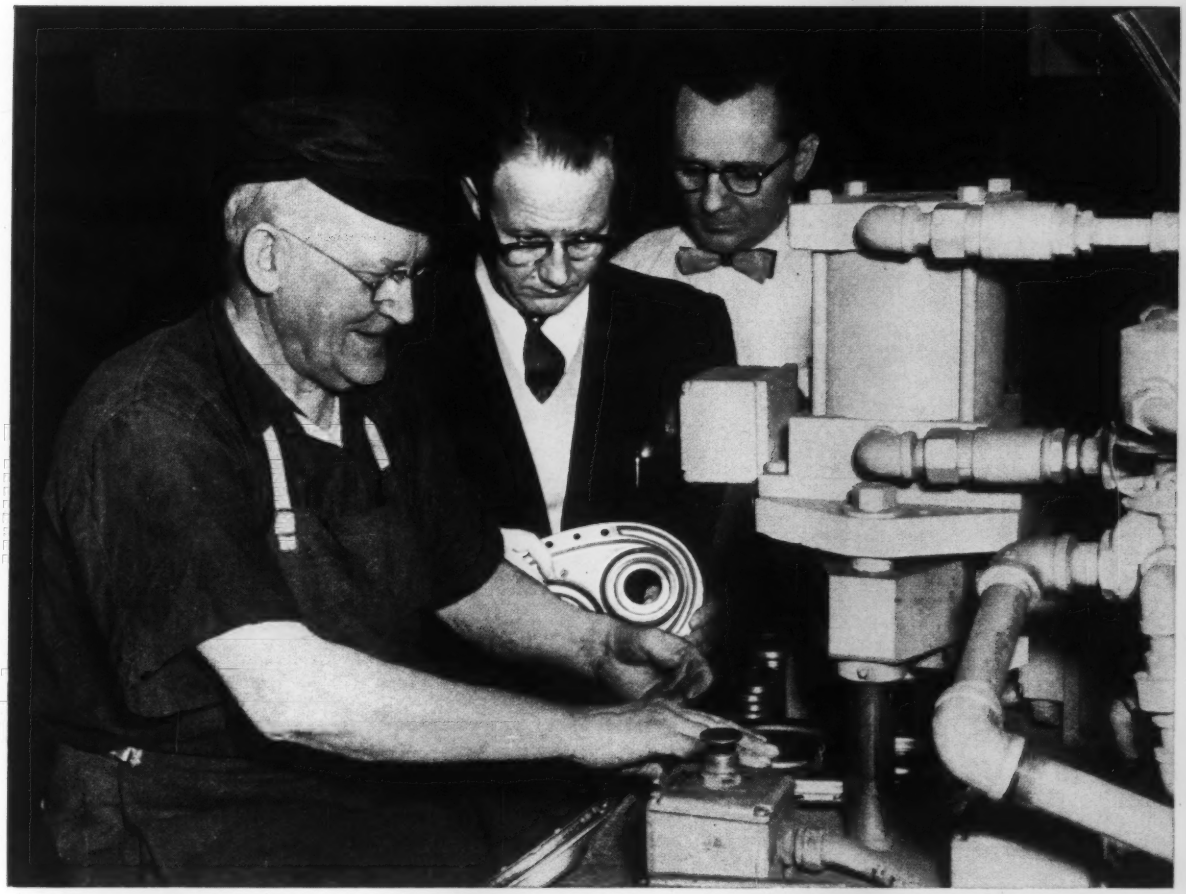
About $10 billion in new orders for major procurement will come out of the Pentagon in the first half. New orders in January were $1.2 billion, says Defense Secretary Neil McElroy: They'll average about $1.7 billion a month for the rest of the half.

Aircraft will come to $4.9 billion during the half; missiles, $2.2 billion; ships, $1.0 billion; vehicles, $0.3 billion; ammunition, $0.3 billion; electronics and communications, $0.8 billion; production equipment and facilities, $0.2 billion.

Over 60 per cent of the new orders for fiscal 1958 will be made this half. Noting that the volume is "extremely large and will tax the capabilities" of the Defense Department to handle it so fast, Secretary McElroy told the President every effort "consistent with sound management" will be made to speed up the ordering process.

Capitol Notes

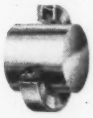
Dollars for highways this year can't possibly be turned into steel and concrete before late 1959 . . . "Buy American" will be attached to the Foreign Aid Program, most Capitol observers predict . . . National Science Foundation and Census Bureau will survey industrial R&D costs . . . Joint Economic Committee's hearings on relation of prices to economic stability and growth begin May 12.



You may have met the man in the middle—

He is one of our C R Sales Engineers. He, or one of his associates, may have been in your plant many times. Here, he's shown helping to check the installation of a C R oil seal on a Detroit automotive assembly line—*after the seal design has been approved for production.* He wants to make absolutely certain this seal is installed correctly to assure maximum performance and service.

This personal supervision of skilled oil seal engineers and their careful attention to detail, typify every phase of research, design, production and testing of C/R Oil Seals. It accounts for the recognition C/R has earned in sealing applications. And it is a major reason why more automobiles, farm and industrial machines rely on C R Oil Seals than on any similar sealing device.



If you have a sealing problem, critical or simple, bring it to Chicago Rawhide. C/R engineers will help you select the correct oil seal of existing types or will cooperate with you on a special design.

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C/R OIL SEAL DIVISION
CHICAGO RAWHIDE

FOUNDATION FOR SAVINGS!

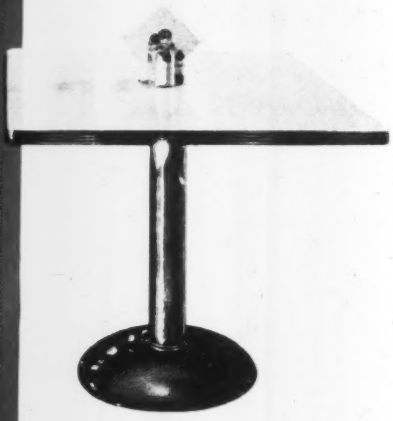
How a Recommendation from the House of Stainless Helped Commercial Table Manufacturer Enlarge Line by Adapting Stainless to Meet Customer's Need

Faced with the problem of supplying tables with supporting columns that would withstand corrosive conditions in service and maintain their bright, sanitary appearance, CHF engineers recognized that stainless steel offered the solution. Having limited experience with this material, they called on The House of Stainless for recommendations.

Our pipe and tubing specialist, collaborating with the sales engineer on this account, recommended the use of ornamental-grade stainless tubing rather than stainless pipe. Because of the strength inherent in stainless, a much lighter gauge was specified than CHF engineers thought possible. And, to complete the service, recommendations were made to utilize their regular equipment without re-designing or re-tooling.

As a result, Chicago Hardware Foundry was able to produce a quality product to meet their customer's exacting requirements, and add another item to the CHF line. At the same time, they realized substantial savings through the selection of the proper grade of tubing and in a gauge adequate for the job.

Photos, courtesy
The Chicago Hardware Foundry Company,
North Chicago, Illinois



Helping customers in all phases of their stainless steel requirements is routine at The House of Stainless. This includes assistance in determining methods as well as materials.

You can count on us for technical and metallurgical help in addition to prompt deliveries from our complete warehouse stocks. Direct mill shipments through our mill placement department, too.

Just phone
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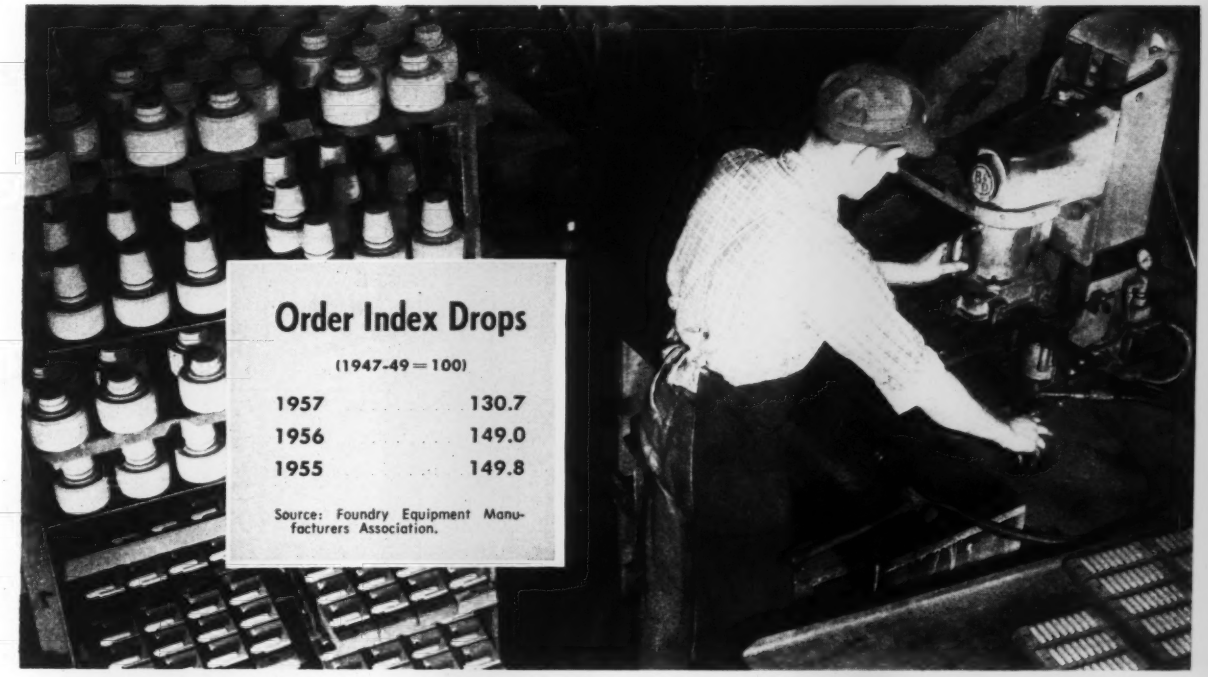
YOUR DEPENDABLE SOURCE FOR BOTH CARBON AND STAINLESS STEEL



Order Index Drops

(1947-49 = 100)

1957	130.7
1956	149.0
1955	149.8

Source: Foundry Equipment Manufacturers Association.

Beardsley & Piper's core blower cuts labor costs

Foundries Limit Buying

They're ordering equipment for replacement, for air pollution control, and some machines to utilize newer cost-saving techniques. But other lines are down

LAGGING sales of castings are causing foundries to hold back on purchases of machines and accessories. Equipment producers don't expect 1958 sales to match the 1957 pace (which was 12 per cent lower than the 1956 rate).

Orders took a nose dive in November, 1957 (the index of the Foundry Equipment Manufacturers Association dropped from 145.3 in October to 59.6 in November), and haven't bounced back yet.

Most manufacturers look for a better second half this year, but they don't expect it to counterbalance a poor first half showing. Leading producers estimate their 1958 sales will be 5 to 30 per cent below those of 1957.

Bright Spots—Dust and fume control equipment is selling well. So is machinery for making shell molds and cores and for pouring, sand mixing, and material handling. But, say most producers, only units that will reduce costs are getting the nod.

Best selling items are those which will pay for themselves quickly. Newer methods, like the CO_2 process, are gaining favor. That means purchase of some new equipment.

Dark Clouds — Agricultural machinery and automotive foundries are doing the least buying. The bulk of all purchases is for replacement and modernization, practically synonymous in the foundry field where firms are redoubling their efforts to cut labor costs.

FEMA notes that a few of its members are experiencing slightly rising demand this quarter, but the large majority report static or falling order volumes. Inquiries are high (reflecting the need for cost saving equipment) but buying decisions are being deferred. Backlogs have shrunk. Deliveries are speedy.

Cautious Attitude—Credit is no problem for potential foundry equipment purchasers. But the traditionally conservative foundrymen seldom buy when they don't have ready cash. One equipment maker says: "Foundry management will delay outlays even for machinery that will slash their costs if demand isn't active."

Foundry equipment makers have boosted their own capacity about 20 per cent in the last five years, partially because of added product lines. But now, they, too, have retarded expansion plans. However, one firm says: "That situation would be corrected quickly if we got a pickup in demand."

Outlook — A foundry equipment leader sums is up: "A wait-and-see attitude is common among foundry managers. They're interested in new equipment; we know that from the huge volume of inquiries we receive and quotations we make. What we need is something to convert their interest into buying decisions."

How Whitney Chain Controls Inventory

Whitney Chain Co., Hartford, Conn., brings its marketing men into product planning at the beginning of the production cycle. Example: Planning May inventory for one of Whitney's products, #40 roller chain, ½ in. pitch. (Pitch is the distance from the center of one link to center of the next.)

A 60-day cycle is used. Production for May inventory will be done in March and April.

1 Inventory Level Is Planned from Sales Estimates

. . . On Mar. 1, regional managers report sales estimates for May.

REGIONAL PLANNED SALES LEVELS (No. of pitches of ½ in. roller chain)			MULTIPLIED BY PREDETERMINED FACTOR*		PLANNED INVENTORY LEVEL
Chicago	84,000	×	3.5	=	294,000
Atlanta	56,000	×	3.5	=	196,000
Dallas	30,000	×	3.5	=	105,000
Hartford	199,000	×	3.0	=	597,000
			TOTAL PLANNED INVENTORY		**1,192,000**

*Whitney's experience showed that three and a half times the planned sales level is usually the best inventory level.

2 Sales Department Figures Production Needs

Pitches on hand	520,000
Due from shop	211,000
Total Current Inventory	731,000
Planned inventory	1,192,000
Current inventory	731,000
PRODUCTION NEEDED ... (Requested by sales dept.)	**461,000**

3 IBM Machine Determines Time at Machine Centers

Pressroom	60 hours
Curling	183 hours
Pin cutoff	40 hours
Heat treat & draw	16 hours
Tumbling	8 hours
Assembly	72 hours

ADVANTAGES

1. **Supervisory personnel can figure exact employment levels and work schedules.**
2. **Inventory is kept in balance.**
3. **Total inventory is reduced 30 per cent.**
4. **Costs are cut.**
5. **Raw material inventories are determined by planned sales levels. They vary according to delivery conditions.**
6. **Planned sales levels are good guides in purchasing equipment, planning shop rearrangements, and forecasting employment levels.**

Marketeers Plan Production

"Bring the marketing man into the product planning picture at the beginning, rather than the end, of the production cycle" —editorial in STEEL (Nov. 18, 1957, p. 107).

EXPLOITATION of that concept has enabled Whitney Chain Co. to gain all the advantages listed above.

The firm initiated its inventory control system (explained above) three years ago with these objectives: 1. To guarantee that inventories of each item kept pace with sales. 2. To avoid confusion by providing an objective governing inventories. (Initiated by sales, the goal was approved by all departments.) 3. To minimize the number of chain sizes in stock. That cut clerical and handling costs.

The center of the program is an IBM 604 electronic computer. In addition to determining workloads at machine centers, it's used to make reports on each step. It does other jobs (such as customer order listings).

It also is used extensively by the accounting department.

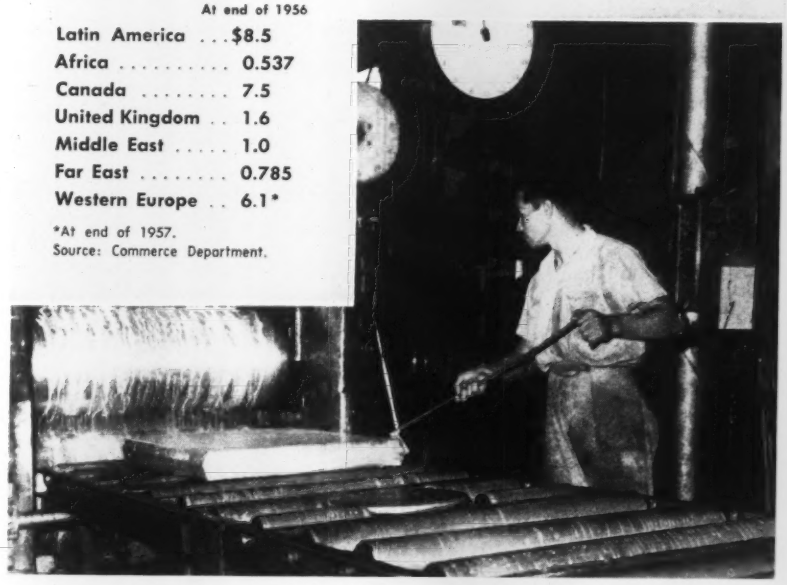
The basic part of the system, the planned sales levels, are determined by studying historical data, market trends, and product shifts. It's important to make the estimates as accurate as possible since they control all the other elements.

U. S. Private Investments Abroad

Billions

At end of 1956	
Latin America	$8.5
Africa	0.537
Canada	7.5
United Kingdom	1.6
Middle East	1.0
Far East	0.785
Western Europe	6.1*

*At end of 1957.
Source: Commerce Department.



Reynolds makes aluminum sheets at this plant in Barranquilla, Colombia

Overseas Ripe for Investor

CAPITAL INVESTMENTS in foreign countries offer a profitable future for American firms, says Loring K. Macy, director of the Bureau of Foreign Commerce, Department of Commerce.

U. S. overseas investments are estimated to be about $36.5 billion, almost triple the figure three years ago.

Potential—Latin American countries, Africa, the Middle East, and Asia are not going to remain underdeveloped—particularly from the standpoint of market size, says Mr. Macy, adding:

"I'm convinced that many countries we now think of as underdeveloped are making giant strides in industrialization. This will continue with or without participation by U. S. private enterprise."

Best Bets — In discussing areas with a big investment potential, Mr. Macy explains that transportation facilities, power, and irrigation are usually considered public projects. But: "Equipment is needed to create facilities. After completion, they provide a market for automobiles, trucks, railroad rolling stock, and electrical equipment." Those are areas which will pay off for private investors.

Mr. Macy admits that even after basic facilities for industrial development are available, there will still be problems. One is the small market for manufactured products in underdeveloped countries—particularly where there are large populations but low purchasing power. Investment problems in such countries are vastly different from those of Western European nations.

Typical Investment Area — Mr. Macy points to growth of American private investments in Africa since World War II. He says there was a 42 per cent increase in value of American direct investments between 1953 and 1956. The Department of Commerce estimates the book value of direct U. S. investments in Africa was $537 million at the end of 1956. About 30 per cent was in mining, 30 per cent in petroleum, 20 per cent in manufacturing, and the rest was diversified.

"The political outlook of Africa presents an opportunity and challenge to U. S. investors," declares Mr. Macy. Morocco, Tunisia, and Ghana are new states. Nigeria (population: 34 million) will become independent in 1960. "Political independence has given a sense of urgency to economic development, and these countries are looking to America as a source of public and private capital."

Problems—One tall barrier stands in the way of increased overseas investments in transportation, communications, and power production: The regulatory agencies of some foreign governments have been unwilling to permit fair rates in the face of depreciating currencies and rising costs.

Guarantee—For companies which are concerned about the expropriation of their investments, Mr. Macy says that Congress recently passed legislation to work out agreements with many foreign countries, such as Brazil and Argentina, African and Far Eastern nations.

Under the terms of the agreements, the U. S. offers a guarantee to businessmen that their investments will be protected. "So far, not many firms have taken advantage of this law, possibly because many don't realize it has been passed," says Mr. Macy.

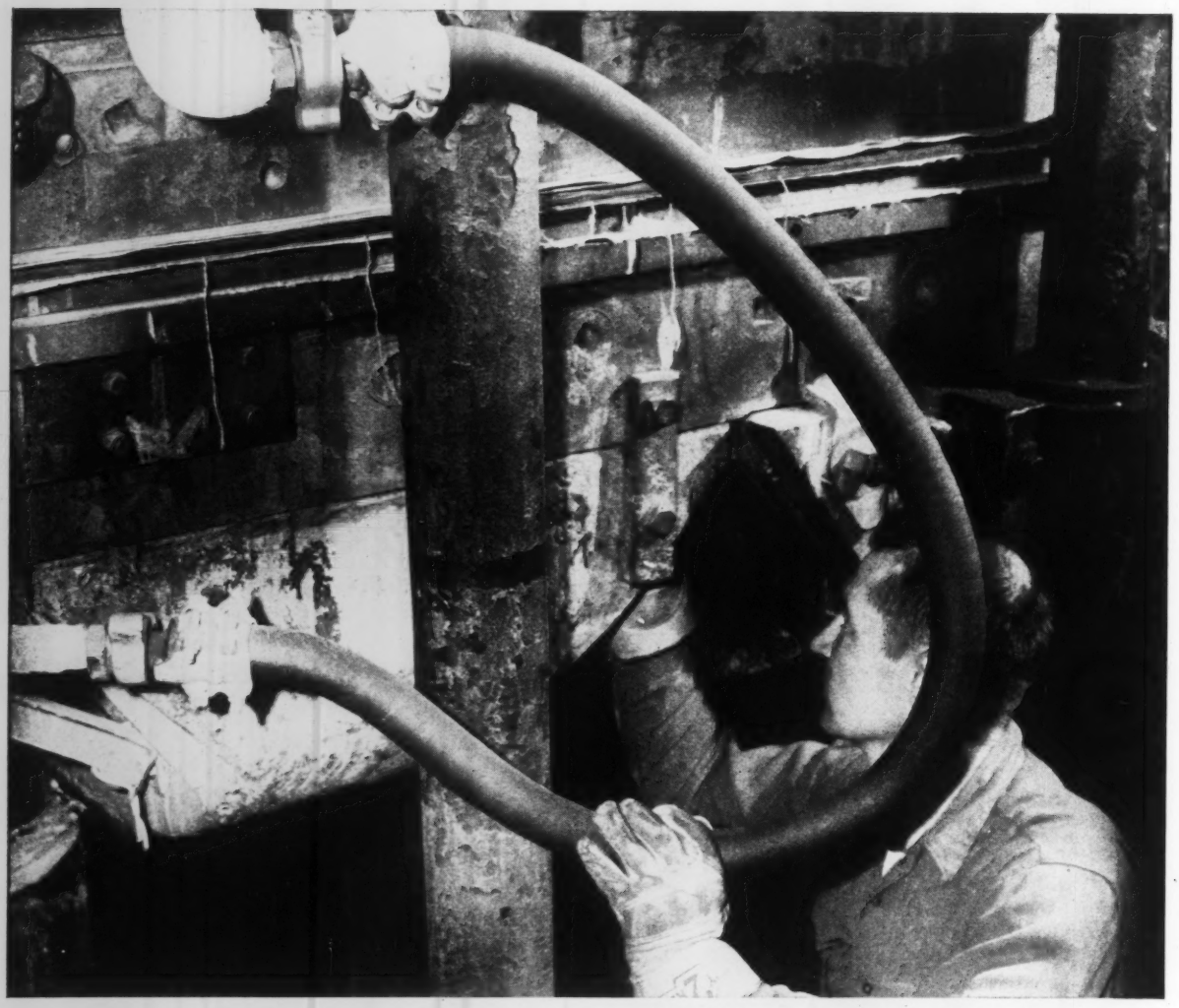
Plan—For firms seeking information about foreign investments, the Foreign Commerce Bureau has prepared 16 books, written for businessmen, dealing with investments in 16 countries. It also publishes the *Foreign Commerce Weekly*.

The bureau is staffed with experts on business and economic problems is overseas countries. Mr. Macy suggests that potential investors should make the agency their first stop.

Japan Trades with Reds

Under a new pact with Red China, Japan intends to barter $200 million in steel products annually. In the past, Japan has shipped some thin gage sheets to that country but supposedly no products that could be made into armaments.

US RUBBER MATCHLESS STEAM HOSE



How to stay alive working next to live steam

Steam—indispensable workhorse in an industrial plant. But if it breaks loose, steam may cause death on contact. Yet this man works with complete security—literally within an inch of his life—because he's working next to the hose that steam cannot burst: wire-braided U.S. Matchless® Steam.

This hose gives ample notice when replacement is needed. Even after long, hard service (and with 200 pound steam pressure) the safety-sure wire-braid construction of U.S. Matchless prevents it from bursting. Instead, just a wisp of steam is allowed to seep through. This acts as a safety device, telling you that replacement is needed. That's why plant safety councils all over the country find no match for U. S. Matchless.

Despite its great ruggedness, this hose is flexible, lightweight, easy to handle. U.S. Matchless steam hose—plus a complete line of industrial hose—is obtainable at any of the 28 "U.S." District Sales Offices, at selected distributors, or write us at Rockefeller Center, New York 20, N. Y. In Canada, Dominion Rubber Co., Ltd.

US RUBBER **Mechanical Goods Division**

United States Rubber

Detroit Shifts Dealers

The migration to the suburbs has cut into downtown car dealer sales 'it margins. Detroit tries to work out swap arranc id syndicates

PITY the big city car dealer. After years of accounting for more than half of industry sales, he's in a profit squeeze because his customers have moved to the suburbs. Left with a huge showroom, he is losing car sales and service accounts.

The metropolitan dealer has two choices:

1. He can follow the public to suburbia, in which case he stands to lose plenty on his downtown investment. Other dealers don't want to take over a losing proposition, and there aren't too many other uses for automobile sales-and-service setups.

2. He can try to increase his sales volume by cutting prices or by bootlegging. He also can pack prices to boost profits, but the practice doesn't work well in today's tight market.

Rustlers—In either case, he inevitably starts invading the sales territory of another dealer. That's why the National Automobile Dealers Association (NADA) is hollering for a return of territorial security agreements which were outlawed by antitrust legislation after World War II.

Although the average car buyer may say "who cares," the auto manufacturers are greatly concerned. Led by General Motors, the industry is in the process of changing its marketing strategy.

Big Switch—"General Motors is reappraising its passenger car and truck distribution network to meet changing market patterns," says William F. Hufstader, distribution vice president.

Mr. Hufstader feels the change can be made within the framework of the present franchise system, but he adds: "It may be that the necessary adjustments will result in fewer dealerships in metropolitan areas."

Before looking at what's likely to happen, it's important to see what has happened to dealer profits as the surge to suburbia increases.

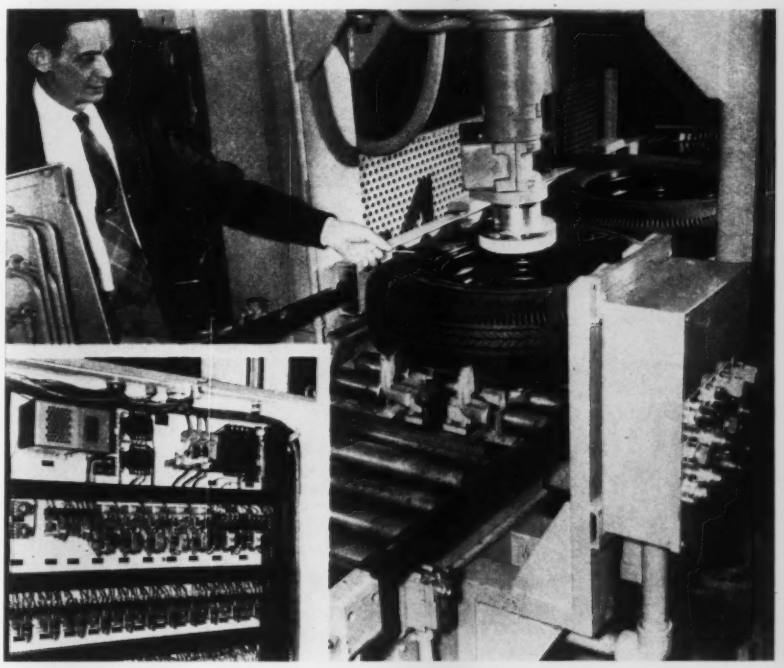
Losses — NADA reports 28 per cent of its members ran in the red last year. Most of the others just broke even. For the whole group, average operating profit (before taxes) was 0.7 per cent of sales, vs. 1.5 per cent in 1955 and 0.8 per cent in 1956.

Even more important, the percentage of absorption slipped from a record high of 51.7 per cent in June, 1957, to 41.7 per cent at the end of last year. (Percentage of absorption is the amount of fixed expenses that can be paid from sales of service and parts. The balance has to come from gross profits on car sales, which also have to pay such variable expenses as salesmen's salaries, warranty costs, and make-ready charges.)

Example: If a dealer's fixed costs are $10,000, and his gross profits from parts and service are $5000, his percentage of absorption is 50 per cent. The other 50 per cent has to come out of new and used car profits.

Metropolitan dealers now have to figure exactly how many cars they must sell and at what price to pay off the rest of their overhead.

What To Do? — The industry doesn't want to lose dealers. It will need them in years to come. Nor does it want to see metropolitan dealers descend upon suburban dealers and run them out of busi-



PONTIAC CAN BALANCE eight tires a minute electronically with this unit. It's so sensitive that the weight of a burnt match will change adjustment needs. Pontiac claims it works faster than similar mechanical setups

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ness. Here are some of the things that are happening or will happen, say autodom's marketing men.

GM Tries Persuasion

General Motors is politely persuading its hardest hit dealers to switch and swap establishments. Most of the action is in the Midwest, but other sections of the country are due for some horse trading, too.

Example: A high volume Oldsmobile dealer sells his downtown facilities to a Cadillac dealer who can make out quite nicely on the number of prospects left behind. The Olds agency either expands the old Cadillac outfit or builds a new agency in a more profitable location.

It's expected that GM will step in with low interest loans to help out. In some cases, the automaker may just pay a dealer for his property so he can afford to set up shop elsewhere.

Syndicates — Another solution: Several dealers banding together. Suppose there are 40 Chevrolet dealers in metropolitan Chicago. Perhaps five or six of them will pool their capital to set up a half dozen showrooms in one end of town, with a single service center to handle them. The arrangement cuts overhead (particularly under the growing concept of open lot selling) and increases the number of cars on display.

The syndicate idea isn't at the full-bloom stage, but American Motors Corp. already has made a beginning in some dealerships where Ramblers are dualed with Oldsmobile. Each line has a separate sales staff and showroom, but they share a single service garage to cut down overhead costs.

Says one Detroit executive: "This looks to be about the only way big city dealers can stay in business in downtown areas."

Pricing Gets Look-See

Not content with redistributing dealers, autodom is also taking a long look at pricing to attract more customers.

Car manufacturers can't tell dealers what to charge for their products, but some astute marketeers are debating a return to the once tried system of figuring dealer markups on the advertised delivered price, including transportation.

As it works now, a Ford dealer in Pittsburgh may have to pass on $90 in shipping costs to his customers while a Plymouth agency down the street only pays $60 because it's closer to the Plymouth factory. This gives the Plymouth dealer a $30 trading (or price packing) edge.

By using a higher markup (possibly 33 1/3 per cent) on advertised delivered prices, including transportation, dealers would wind up with the same gross profit margin (about 25 per cent), but they would have one less item to dicker with. Some industry sales executives believe this would lead to more competitive pricing and less price packing—both calculated to win customers.

Can Middleman Hold Out?

A final phase of the distribution hassle stems from growing demands for reliable, not glamorous, transportation.

George Romney, AMC president, says the public is looking elsewhere than to the auto industry for prestige symbols. Economy car sales support his thinking.

Question—Will the economy cars (imported and domestic) push Ford, Chevrolet, and Plymouth up into the middle price class? They already heavily overlap cars like Pontiac, Edsel, and Dodge.

The chunk of the market won by medium priced cars fell from its traditional 40 per cent in 1955 to 32 per cent last year; yet it contains more models than either the low or high priced fields. If the trend continues, Detroit apparently has two choices: Cut down on the number of styles or the number of models. Both steps will probably be necessary.

In this kind of squeeze, Detroit wonders whether dealers of medium priced cars can hang on until the market rises to the 8 million and 10 million unit level which will support them all.

The public, which clearly recalls paying postwar packed prices while the auto companies pretended nothing was wrong, may feel dealers are only getting what they deserve. But car builders, whose manufacturing plants are geared to high production, can't afford to lose their distribution network. Auto company suppliers have to hope dealers will prosper.

U. S. Auto Output

Passenger Only

	1958	1957
January	489,357	641,591
February	392,112	571,098
2 Mo. Total	881,469	1,212,689
March		578,826
April		549,239
May		531,365
June		500,271
July		495,629
August		524,354
September		284,265
October		327,362
November		578,601
December		534,714
Total		6,117,315

Week Ended	1958	1957
Feb. 15	101,656	145,846
Feb. 22	89,977	138,938
Mar. 1	91,508	140,362
Mar. 8	83,892	140,161
Mar. 15	87,808†	141,038
Mar. 22	82,000*	138,646

Source: *Ward's Automotive Reports.*
†Preliminary. *Estimated by STEEL.

Exhaust Notes

• Chrysler Corp. will switch some of its operations to new or expanded facilities late this year to better coordinate manufacturing and assembly procedures:

Body building and assembly of Imperials will be transferred to the Warren Avenue plant.

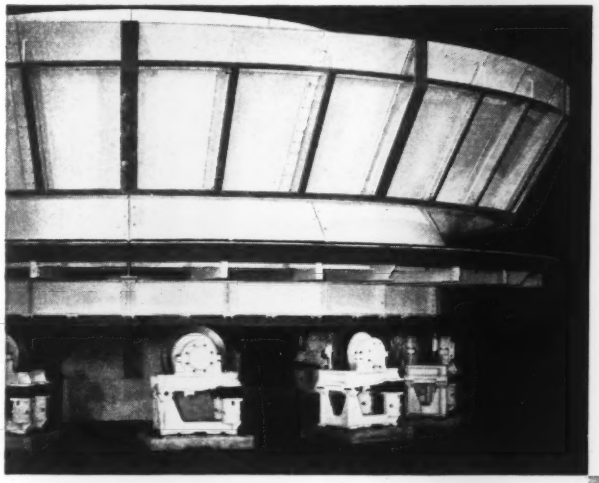
De Soto Fireflite and Firedome body and assembly operations will be moved to the Jefferson Avenue plant.

Dodge enginework will be discontinued at the Dodge main plant. Engines will be built at the Mound Road and Trenton, Mich., plants.

Chrysler engine operations will be switched to the Trenton engine plant.

• Ford Motor Co. is considering making some of its own fasteners (screws) in its Indianapolis cold heading plant.

• R. S. Reynolds Jr., president, Reynolds Metals Co., predicts the use of aluminum in the transportation industry will increase from 400,000 tons (1955) to 3 million tons by 1975.



THE HEAVIER THE LOAD...

the more you need HYATTS . . . because straight cylindrical roller bearings will carry far more load, size for size, than any other anti-friction type. Here HYATTS support *one million* pounds on a 50-foot sinter cooler.

THE HIGHER THE SPEED...

the more you need HYATTS . . . because they're built from superior steels, with precise control of internal clearances to guarantee smooth trouble-free performance in critical applications like locomotive traction motors.

THE MORE YOU NEED *Cylindrical* HY-ROLL BEARINGS

Today's more compact machine designs, which must often accommodate higher speeds and loads in less space than ever before, are showing up the shortcomings of limited-capacity bearings. That's why more and more manufacturers are turning to HYATT Hy-Rolls—the straight cylindrical roller bearings that can carry *more* radial load in *less* space. Ask your nearest HYATT Sales Engineer for recommendations—he can help you solve your problems! Hyatt Bearings Division, General Motors Corporation, Harrison, N. J.; Pittsburgh; Detroit; Chicago; and Oakland, Calif.

THE RECOGNIZED LEADER IN CYLINDRICAL BEARINGS

1908–1958 GM FORWARD FROM FIFTY

HYATT HY-ROLL BEARINGS

THE "WORKHORSES" OF MODERN INDUSTRY

ECONOMIC FACTS ON FASTENERS

COARSE THREADS LEAD TO LOWER ASSEMBLY COSTS

- **Fasteners with coarse threads assemble faster, easier**
- **Make a stronger joint, too**

Big savings hide in small details . . . in the threads of bolts, nuts and cap screws, for example.

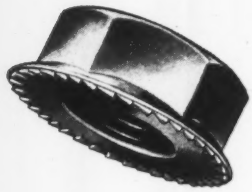
Coarse threaded fasteners tighten with only two-thirds the revolutions needed for fine threads . . . speeding assembly. Coarse threads enter nuts or mating holes with less tendency to cross thread when not truly positioned. Often this ease of starting is a decisive production advantage. Even in *handling*, there's an advantage. Coarse threads need less "babying" to avoid damage.

• **More strength.** With greater resistance to stripping, coarse threaded fasteners can be tightened more for a stronger assembly.

Yes, even with standard fasteners there are ways to save money and improve quality . . . by looking at your products through the eyes of an RB&W Fastener Man. His service is available just for the asking. Russell, Burdsall & Ward Bolt and Nut Company, Port Chester, New York.

R B & W
113th year

Plants at: Port Chester, N. Y.; Coraopolis, Pa.; Rock Falls, Ill.; Los Angeles, Calif. **Additional sales offices at:** Ardmore (Phila.), Pa.; Pittsburgh; Detroit; Chicago; Dallas; San Francisco. **Sales agents at:** Milwaukee; New Orleans; Denver; Fargo. **Distributors from coast to coast.**



Spin-Lock Nuts dig in to stay tight

The photograph shows the many hardened "anchors" on the flange of a Spin-Lock Nut. These "ratchet-action" teeth require 20% more torque to loosen than to tighten. They bite in as the nut turns down on its seat. Like Spin-Lock Screws, these nuts can stay put in products subject to vibration and cyclic temperature variations. Send for bulletin.

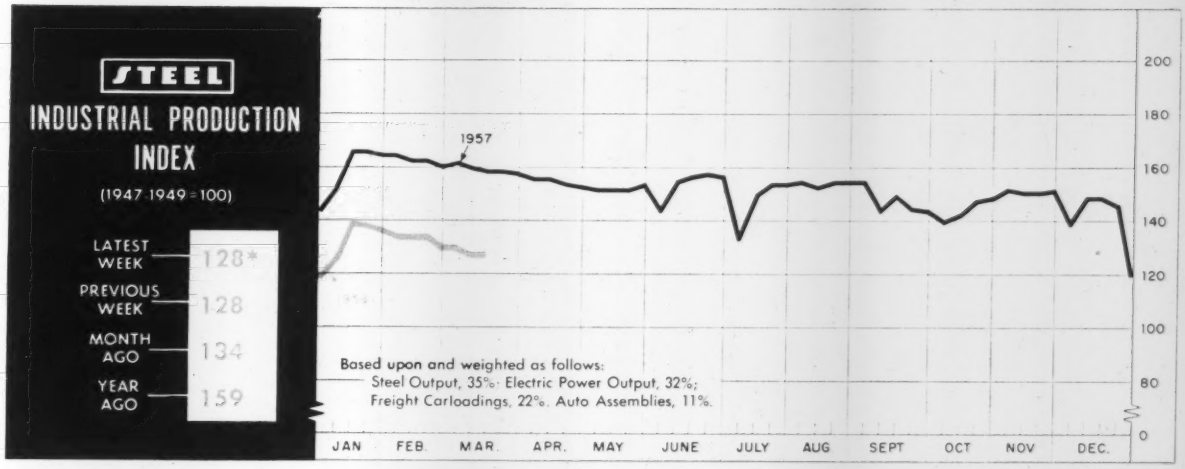
High strength bolts save costly crane

At one company's plant, a large, heavy-duty crane had deteriorated due to rivets loosening. Replacing with new rivets was no permanent answer, but RB&W high tensile bolts were.

Used with hardened washers, these RB&W bolts clamp members together so tightly, no slipping into bearing takes place, holes are reinforced against fatigue, and connections become vibration-proof.

Assembling heavy duty equipment with RB&W high strength bolts in the first place can avoid such problems and create more satisfaction with the product.

RB&W FASTENERS—STRONG POINT OF ANY ASSEMBLY



Week ended Mar. 15.

Production Trend To Level Off Until Fall

INDUSTRIAL PRODUCTION in February, measured by the Federal Reserve Board at 130 per cent of the 1947-49 average (seasonally adjusted), hit its lowest point since December, 1954. Judging from the action of STEEL's index so far this month (see chart above), the FRB index will dip even farther this month—possibly to 128.

Even though the situation is depressing, it does imply hope for the forthcoming revival. As many component manufacturers told STEEL editors last week: "Business can't get much worse. It can only get better." (See Page 61.) One thing is sure: The decline has slowed down. During January, STEEL's index declined each week. In February, it stabilized temporarily at the 134 level (1947-49=100) for three weeks before auto production shoved it lower. It has come to another halt at 128 for the two-week period ended Mar. 15.

Forecasting Casualties — In the last few months, short term forecasts for an upturn have been about as reliable as a politician's election-year promises. Steel production, which was supposed to bottom out last month, is still waiting for a stimulus. Auto production, chilled by cool February sales, shows no sign of warming with the spring weather. Freight carloadings, which spurted momentarily early this month, cannot be expected to rise significantly until factories produce more goods for shipment. And output of electricity is downtrending seasonally.

It isn't likely that any of those trends will force the production indexes down much farther. But they don't make for an improvement in the immediate future either. More likely is a sidewise trend with minor fluctuations tending to be more plus than minus as May and June come closer.

Seasonal Hope—Secretary of Commerce Sinclair Weeks tags the next 60 days as the acid test on jobs. They could also be the test for other

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1000 net tons)[2]	1,415[1]	1,463	2,392
Electric Power Distributed (million kw-hr)	11,800[1]	11,793	11,650
Bituminous Coal Output (1000 tons)	8,110[1]	8,440	9,709
Crude Oil Production (daily avg—1000 bbl)	6,400[1]	6,328	7,799
Construction Volume (*ENR*—millions)	$313.1	$365.1	$412.3
Auto, Truck Output, U. S., Canada (*Ward's*)	111,612[1]	108,322	172,478
TRADE			
Freight Carloadings (1000 cars)	525[1]	545	689
Business Failures (Dun & Bradstreet)	358	331	327
Currency in Circulation (millions)[3]	$30,641	$30,562	$30,609
Dept. Store Sales (changes from year ago)[3]	+7%	+1%	−10%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$22,267	$23,387	$21,581
Federal Gross Debt (billions)	$275.7	$275.1	$276.1
Bond Volume, NYSE (millions)	$23.6	$24.3	$18.1
Stocks Sales, NYSE (thousands of shares)	12,007	10,452	8,288
Loans and Investments (billions)[4]	$88.6	$87.4	$85.0
U. S. Govt. Obligations Held (billions)[4]	$27.7	$26.9	$25.5
PRICES			
STEEL's Finished Steel Price Index[5]	239.15	239.15	227.41
STEEL's Nonferrous Metal Price Index[6]	201.9	202.4	239.9
All Commodities[7]	119.6	119.4	116.9
Commodities Other than Farm & Foods[7]	125.9	125.8	125.4

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1958, 2,699,173; 1957, 2,559,490. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-39=100. [6]1936-39=100. [7]Bureau of Labor Statistics Index, 1947-49=100.

FAST

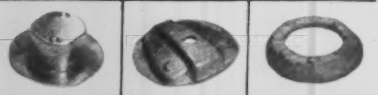
PRODUCTION OF NEW PRODUCT *Fabrications* FOR QUICK DELIVERY OF

Spinformings

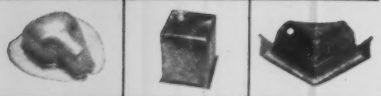
GUIDED MISSILES, TURBO JETS,

COMMERCIAL PLANES, PARTS,

Hydroformings

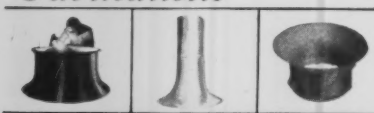


INDUSTRIAL PRODUCTS AND A



GROWING LIST OF NEW, UN-

Fabrications



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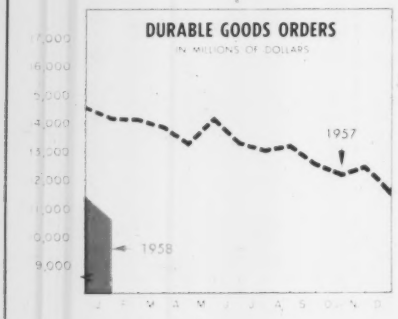
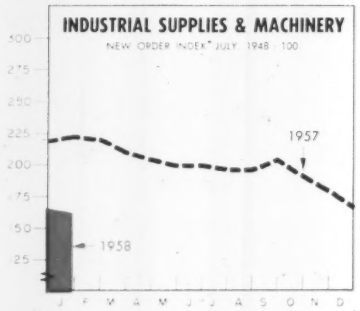
THE BUSINESS TREND





	New Orders* 1958	New Orders* 1957	Sales* 1958	Sales* 1957
Jan.	10,576†	14,176	12,639†	14,941
Feb.	.....	14,102	.....	14,808
Mar.	.....	13,853	.....	14,198
Apr.	.....	13,234	.....	14,254
May	.....	14,115	.....	14,296
June	.....	13,249	.....	14,207
July	.....	13,005	.....	14,573
Aug.	.....	13,160	.....	14,297
Sept.	.....	12,519	.....	14,132
Oct.	.....	12,154	.....	13,932
Nov.	.....	12,434	.....	13,548
Dec.	.....	11,399	.....	13,902

*Seasonally adjusted. †Preliminary.
U. S. Office of Business Economics.

	1958	1957	1956
Jan.	163	221	190
Feb.	...	219	190
Mar.	...	210	190
Apr.	...	203	195
May	...	199	199
June	...	199	197
July	...	197	203
Aug.	...	197	211
Sept.	...	203	203
Oct.	...	192	206
Nov.	...	180	220
Dec.	...	167	218

*Seasonally adjusted.
Amer. Supply & Machinery Mfrs.' Assn.

Charts copyright, 1958, STEEL.

segments of the economy. The auto industry usually perks up during the period. If inventories of new cars can be kept at present levels—or less—chances are good some improvement will show up by June. *Ward's Automotive Reports* claims the inventory increase came to a halt this month.

The opening of the Great Lakes ore season should also stimulate business, although there will be no rush this year to get the boats moving because ore supplies are ample. The movement of both coal and ore will brighten the outlook for the railroad industry.

Officials in the steel industry are more convinced than ever that inventories are getting down to the danger point, and that customers will be coming into the market sometime this spring. Increased construction activity should help move the operating rate up a bit in the next two months.

Long Term Outlook Better

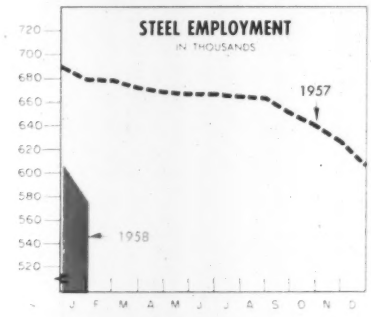
Businessmen are turning their attention from the short term to the long term outlook. By so doing, they may be giving tacit recognition to the prolonged character of the recession. Two months ago, they were anticipating a spring upturn; now they are thinking in terms of weathering the storm until the fourth quarter.

Such thinking is evident in many of the hundreds of annual reports coming out. Typical is the comment of Ralph J. Cordiner, president of General Electric Co.: "GE is making its plans on the assumption that the nation will resume its long term growth within the year following the present period of adjustment." Or the assurance by officials of Continental Can Co. that they look for 1958 "to be a good year, and, if as we believe, business picks up in the second half, it may be quite a good year."

Some economists are taking the same attitude. Henry H. Heimann, executive vice president of the National Association of Credit Men, declares: "A resumption of business on an active scale should hardly be delayed beyond the later months of this year unless we become panicky and decide that the downturn must be checked immediately at the cost of more inflation."

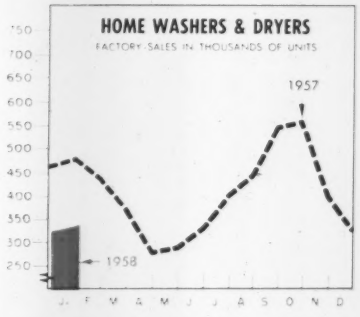
Meany Sees Downtrend

AFL - CIO President George Meany makes no bones about his



	Employment in Thousands		Payroll in Millions	
	1958	1957	1958	1957
Jan.	575	678	$297.4	$360.4
Feb.	...	677	....	327.5
Mar.	...	671	....	344.2
Apr.	...	668	....	331.5
May	...	666	....	338.0
June	...	666	....	324.8
July	...	665	....	334.6
Aug.	...	663	....	343.7
Sept.	...	651	....	330.1
Oct.	...	640	....	345.6
Nov.	...	626	....	316.3
Dec.	...	606	....	299.6

American Iron & Steel Institute.



	Washers		Dryers	
	1958	1957	1958	1957
Jan.	238,153	331,314	98,630	144,621
Feb.	.....	319,580	.....	114,517
Mar.	.....	286,205	.....	83,668
Apr.	.....	230,675	.....	42,850
May	.....	254,195	.....	31,572
June	.....	282,289	.....	46,783
July	.....	335,139	.....	70,011
Aug.	.....	329,046	.....	116,601
Sept.	.....	284,299	.....	164,468
Oct.	.....	369,487	.....	185,772
Nov.	.....	263,460	.....	141,663
Dec.	.....	206,787	.....	118,116
Totals	.....	3,589,476	.....	1,260,642

American Home Laundry Mfrs. Assn.

position on the near future. In a letter to President Eisenhower, he said: "Every current economic indicator demonstrates that the recession has not hit the bottom, and thus there is need for immediate action."

He indicated that on the basis of latest information, unemployment is continuing to increase in March; industrial production is still declining; new orders are dropping; business investment is down; total retail sales dropped in February; the workweek is declining; and nonfarm employment is still downtrending.

Construction Still a Plus

"Construction stands firmly in the plus column and promises to remain there," according to Donald D. Couch, vice president of marketing and commercial development for American Radiator & Standard Sanitary Corp. He told the National Industrial Conference Board last week that total construction this year will be $48.7 billion, up 3.2 per cent from 1957's total. In the plus column will be: Residential, hospital and institutional, educational, public utilities, and highway building. "It is not expected that there will be an upturn in industrial building activity much before the end of 1958."

Consumers Keep Hopes Up

The Board of Governors of the Federal Reserve System has made official the findings of the 1958 Survey of Consumer Finances conducted in co-operation with the University of Michigan in January and February. The report bears a striking resemblance to that made in early 1949 and 1954. About one-third of the respondents feel they are better off financially now than they were a year ago, while another third say they are worse off. While many believe that this year's business situation is not going to be as good as last year's, few think that their own incomes will decline. As for next year, a whopping 72 per cent expect to be making as much or more than they are now.

Purchase plans for most items except automobiles compared favorably with those of most recent years. Over 7 per cent of the spending units plan to buy new homes this year, which is below the figures for the last three years but better than the response in either 1949 or 1954. The number planning to buy furniture or major home appliances was less this year than it was a year ago or in 1949 but greater than in 1956 or 1954.

Low Tolerance for Strip?

You'll Love

Somers

Performance

With the installation of the first Accu-Ray Nuclear gauge ever employed in the non-ferrous industry, Somers is able to control the thickness of thinstrip to the hundred-thousandth even on production runs.

This is typical of the modern equipment and the careful quality control that enables Somers Brass to produce the one thinstrip job in ten that must meet exacting standards with absolute uniformity.

If you are now using or anticipate the need for thin gauge brass, nickel, copper and alloys with extremely close tolerances write for the Confidential Data Blank. There is no cost or obligation.

Somers THIN STRIP

Somers Brass Company, Inc.
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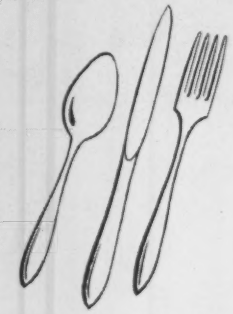
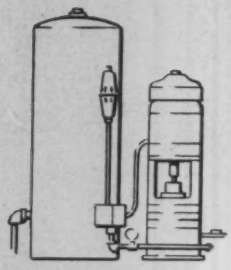
DRIVE AND PROPELLER SHAFTS

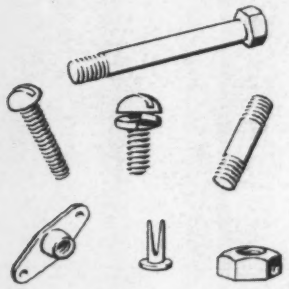


CUTLERY

FITTINGS AND VALVES



PUMP SHAFTS
AND VALVES



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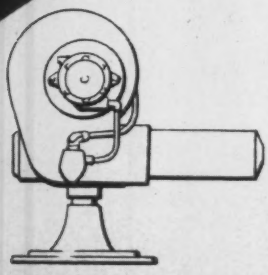
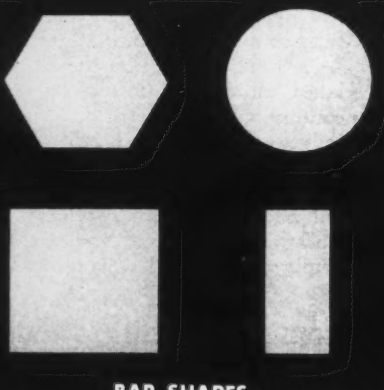


BURNER NOZZLES



BAR SHAPES

If you use stainless steel in the manufacture of your products, they will be improved with the excellent quality of J & L Stainless Steel. Our modern facilities stock a large range of sizes and grades, and we're ready to ship from stock right now.

From the first order on, you can depend on the J & L Stainless Steel Division in Detroit to give you quality, service and immediate shipment. Write or call for the latest complete stock lists.

Improve your Products with . . .

J&L STEEL STAINLESS
BAR • WIRE • BILLETS

Jones & Laughlin Steel Corporation • STAINLESS STEEL DIVISION • Box 4606, Detroit 34

W. D. SCHELBE
Wolverine Tube purchasing dir.

S. P. CURTIS
U. S. Steel engineering post

FRANK J. PHILLIPS
Cyril Bath v. p.-gen. mgr.

W. J. CALIFF JR.
Porter division post

W. D. Schelbe was appointed director of purchases, **Wolverine Tube Div.**, Calumet & Hecla Inc., Allen Park, Mich.

S. P. Curtis was appointed chief engineer, central operations-steel and coal, **United States Steel Corp.**, Pittsburgh. He was chief engineer of the Fairless Works.

Walter H. Bertram, for six years manager of the Cleveland sales office of Associated Spring Corp., was promoted to sales manager, **Raymond Mfg. Div.**, Corry, Pa. He succeeds the late **Lourie P. Baker.**

William H. Rowell and **John P. Lord** were made product managers for bolted couplings and welding fittings, respectively, by **Dresser Mfg. Div.**, Dresser Industries Inc., Bradford, Pa.

T. S. Pacer was elected executive vice president, **Illinois Gear & Machine Co.**, Chicago. He was vice president.

Ralph B. Weidner joined **Safway Steel Products Inc.**, Milwaukee, as research and development engineer. He was chief engineer and assistant to the general manager, Wisconsin division, Aluminum Industries.

Ned A. Ochiltree Jr. was appointed to the new post of administrative assistant to the executive vice president at **Ceco Steel Products Corp.**, Chicago. He was works manager of the main manufacturing plant, and is succeeded by **Walter Seabold.**

Frank J. Phillips was named vice president and general manager, **Cyril Bath Co.**, Solon, Ohio. He was sales manager and now fills the post held by **Richard Humiston**, formerly executive vice president, who resigned in January.

Charles R. Spencer was appointed executive vice president, **Lynchburg Foundry Co.**, Lynchburg, Va.

Kenneth F. Potter was named director of engineering, **American Hoist & Derrick Co.**, St. Paul. Former chief mechanical engineer, be succeeds **J. J. Hite**, who fills the new post of principal consulting engineer in product design and manufacturing. **Lee E. Coulter** was made assistant to the president. He continues as assistant secretary of the company and as president of Machinery Investment Corp., subsidiary.

Philip G. Fellinger was made product manager, **R. D. Werner Co. Inc.**, New York. He had been associated with Speedway Mfg. Co., division of Thor Power Tool Co., and also was eastern regional manager of Portable Electric Tools Inc.

George H. Nutman was appointed a vice president, **Lipsett Steel Products Inc.**, Philadelphia.

Ralph E. Evans and **Harry Cuthbert**, formerly with Lycoming Div., Avco Mfg. Corp., joined **Hercules Motors Corp.**, Canton, Ohio. Mr. Evans is assistant manager-distributor sales. Mr. Cuthbert is assistant chief engineer for the new line of air-cooled engines.

W. J. Califf Jr. was made manager, reinforcing bars, for **Connors Works**, Connors Steel Div., H. K. Porter Company Inc., Birmingham. He was Connors' Georgia district sales representative.

Edward A. Murray was made assistant vice president-sales at Cleveland for **American Steel & Wire Div.**, U. S. Steel Corp. Former sales manager, Chicago district, he replaces **M. D. Millard**, recently made an administrative vice president for the corporation in Pittsburgh.

Robert W. Marriott was made product manager, stainless steels, for **Whitehead Metal Products Co. Inc.**, New York.

Donald G. Dutcher joined **Hanson-Van Winkle-Munning Co.**, Matawan, N. J., as chief electrical engineer.

J. C. Criswell succeeds **W. H. Bryant**, retired, as director of purchases, **Electric Wheel Co.**, Quincy, Ill., division of Firestone Tire & Rubber Co.

Ralph Costa was made vice president-general manager, **B. H. Hubbert & Son**, Baltimore. He was sales manager, machinery division, Crown Cork & Seal Co.

At **Joseph T. Ryerson & Son Inc.'s** Pittsburgh steel service plant, **A. Philip Brendel** was made manager, reinforcing products sales, to replace **John H. Van Horne**, transferred to the Los Angeles plant. **David W. Wolff** succeeds **Gene W.**

G. M. STICKELL
Landis Machine president

GLENN HERZ
Hyster chief engineer

VICTOR BROWN
Kropp Steel president

Sullenger as general order department manager. Mr. Sullenger becomes a field sales representative.

G. M. Stickell, formerly vice president and general manager, was elected president and general manager of **Landis Machine Co.,** Waynesboro, Pa. **J. H. Elliott,** former president, was appointed chairman of the board and vice president. **R. E. Yingling** was named director of sales, and is succeeded as domestic sales manager by **D. Roy Stoner Jr. A. R. Margin** was made assistant export manager. Other appointments: **L. H. Hess** from treasurer to treasurer and assistant controller; **L. H. Randolph,** works manager, main plant; **F. Nell,** works manager, tap division; **R. I. Eyler,** plant engineer.

William F. Fowler Jr., general manager, **Thor Power Tool Co.'s** Aurora, Ill., administrative offices, was appointed to the added post of manager of Thor branch operations.

Robert Hayes was made acting general superintendent of Republic Steel Corp's **Truscon Div.** screen plant in Canton, Ohio. He succeeds the late **B. V. Edwards.**

Hugh M. Hutchison fills the new post of co-ordinator, supplemental unemployment benefit and unemployment compensation for **Jones & Laughlin Steel Corp.,** Pittsburgh.

Lewis J. Willner was made manager of the Chicago area for **Luria Bros. & Co. Inc. F. W. Toohey** transferred to the New York office, where he will serve as a special assistant to the president.

Frank C. McGough was made superintendent, fuel and power department, Chicago district, **Youngstown Sheet & Tube Co.**

Glenn Herz succeeds Al Zwald, retired, as chief engineer, **Hyster Co.,** Portland, Oreg. Mr. Herz was assistant chief engineer. Mr. Zwald is retained as an engineering consultant, with headquarters at the Portland plant.

Victor Brown was elected president and general manager of **Kropp Steel Co.,** Rockford, Ill., subsidiary of Kropp Forge Co., Chicago. He is an executive vice president, parent firm.

J. R. Whiteside, executive vice president, was elected president of **Simpson Electric Co.,** Chicago.

Frank E. Pringle was named general sales manager, **Howe Scale Co.,** Rutland, Vt., division of Safety Industries Inc. He was assistant general sales manager. He was with Sperry Products Inc. prior to 1956.

Karl A. Wildason was made sales manager, **Hohman Plating & Mfg. Inc.,** Dayton, Ohio. He previously operated Dayton Re-New Tool Co., which he founded. Mr. Wildason served for many years as Dayton, Ohio, sales manager for DeVilbiss Co.

Ernest Auerbacher was elected vice president in charge of the export sales and engineering services of **Alvey Conveyor Engineering Co.,** St. Louis, subsidiary of Alvey Conveyor Mfg. Co.

Sales divisions, handling consumer products for the container division of **Jones & Laughlin Steel Corp.,** have been merged into one sales force. **Vincent Anson** was made manager-consumer product sales. Former merchandising manager-galvanized wire, he is in Toledo, Ohio. **H. J. Kennedy** was named eastern regional manager-consumer sales, Toledo. **H. J. Stephany** was named central regional manager-consumer product sales, Lebanon, Ind. **J. S. Browne** was made southern regional manager-consumer product sales, Atlanta.

C. Glen Bigelow Jr. fills the new post of director of research, **Selas Corp. of America,** Dresher, Pa. He was with American Machine & Foundry Co., most recently serving as new products secretary, New York headquarters.

Arthur S. Marvin was appointed vice president-engineering, **American Bridge Div.,** U. S. Steel Corp., Pittsburgh. He succeeds **J. D. Rollins,** named vice president-facility planning, U. S. Steel. **F. K. Goodell** was made chief engineer for the division; **K. D. Cunningham,** district engineer; **O. H. Ormsby,** assistant district engineer.

Harry P. Troendly was elected a group vice president of **Borg-Warner Corp.,** Chicago. He has been president of the corporation's Spring Div. since 1953.

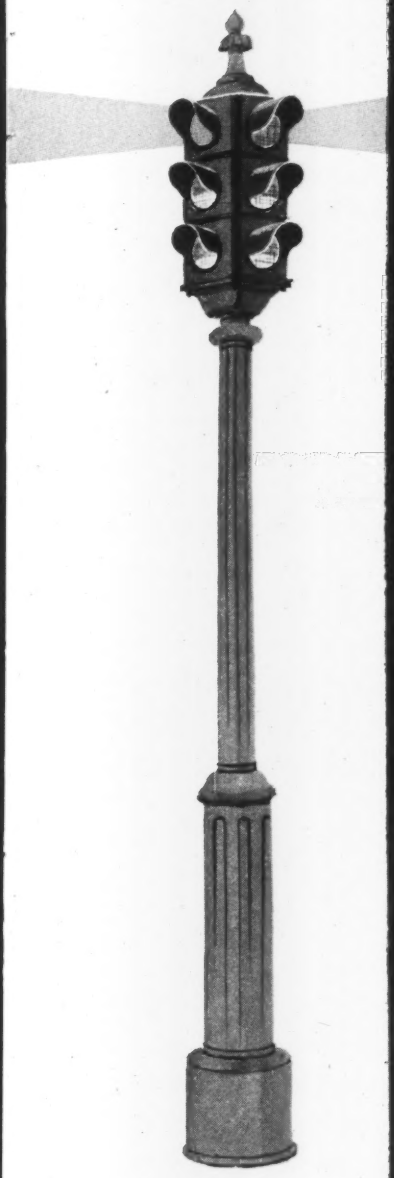
Emil R. Gazdik, formerly sales engineer for Evans Winter Hebb Inc., joined **Automatic Molding Machine Co.,** division of Wagner Bros. Inc., Detroit, as eastern regional engineer.

William D. Marshall was made assistant to the product manager, electrical manufacturing division, **National Acme Co.,** Cleveland.

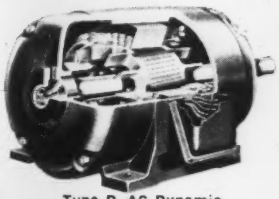
Continental Aviation & Engineering Corp., Toledo, Ohio, promoted **John W. Watson** to director of purchases.

Denison Engineering Div., American Brake Shoe Co., Columbus, Ohio, appointed **Don Arnold** Detroit district manager at Birmingham, Mich.; **John W. Lindsay,** Cleveland district manager.

William F. Boyle, general manager, Pelton Div., San Francisco, **Baldwin-Lima-Hamilton Corp.,** was made general manager of the Hamilton, Ohio, Div. He is a vice president of the corporation. **Ira M. White,** chief engineer at Pelton, was elected a vice president of



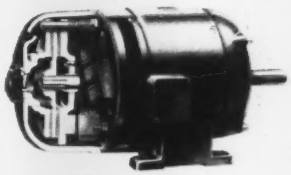
GIVE YOUR PRODUCTS THE BEST OF BRAKES!



Type D, AC Dynamic

ROLLING STOP... Master Type D Dynamic Unibrake Motors. Braking is obtained with a unique, patented brake winding superimposed on the stator winding. Simple, compact, with no DC current required, the brake has no moving parts. There is nothing to wear or adjust... braking torque repeats consistently. Particularly recommended for automatic applications where static holding is not desired. Sizes ¼ to 30 H.P.

MASTER UNIBRAKE MOTORS



Type M—Magnetic

STOP-HOLD... Master Type M Magnetic Unibrake Motors. For quick, controlled stopping... especially when you want to hold the load. Spring-setting magnetic brakes of the friction disc type combine with motor in a compact, integral unit. Sizes... ⅛ to 150 H.P.

MASTER GEARMOTORS and variable speed drives can be furnished with Unibrakes, too. See Master for the perfect power drive for you.

THE MASTER ELECTRIC CO.

DAYTON 1, OHIO

DIVISION OF RELIANCE ELECTRIC AND ENGINEERING CO.

CHARLES W. O'CONNOR
Octigan Forge gen. mgr.

E. R. TORGLER
Dresser Mfg. dir.-manufacturing

L. F. HECKMANN
Union Metal gen. sales mgr.

LUDWIG ZENGELER
NCG Div. vice president

B-L-H, and named to succeed Mr. Boyle as Pelton general manager.

Charles W. O'Connor was made general manager, **Octigan Forge Div.**, H & B American Machine Co. Inc., Chicago. He was comptroller of H & B, which he joined in 1955.

E. R. Torgler, works manager, was promoted to director of manufacturing, **Dresser Manufacturing Div.**, Dresser Industries Inc., Bradford, Pa. In addition, he will supervise industrial relations and personnel departments at Bradford. **J. R. Harrahill**, assistant to the general manager for manufacturing and engineering, was appointed acting works manager, Bradford and Wellsboro, Pa., plants. **Charles Kuhn** was made sales manager, regular products. **Stephen B. Hodges** was made director of marketing planning and control. Mr. Kuhn was formerly general sales manager, Hills-McCanna Co. He assumes the post vacated by **H. Z. Hight**, now president of Bonded Products Inc.

Roy J. Henderson was made assistant purchasing agent for tools and equipment at the Endicott, N. Y., manufacturing plant of **International Business Machines Corp.**

T. Ross Welch was made general manager, TC Components Div., **Brubaker Electronics Co.**, Los Angeles, subsidiary of Telecomputing Corp.

James A. Erdle was appointed chief engineer, **Johnson & Hoffman Mfg. Corp.**, Mineola, N. Y. He was manufacturing superintendent of Sylvania Electric Products Inc.'s Warren, Pa., plant.

L. F. Heckmann was made general sales manager, **Union Metal Mfg. Co.**, Canton, Ohio. He succeeds **D. B. Hanna**, former vice president-sales, retired. Mr. Heckmann was assistant general sales manager.

R. Rex Hartup was appointed prestress planning engineer for **Leschen Wire Rope Div.**, H. K. Porter Company Inc., St. Louis.

Frank R. Elliot was appointed manager of **Westinghouse Electric Corp.'s** Attica, N. Y., plant. He succeeds **E. I. Anderson**, retired.

Erwin G. Schoeffel was made manager of **Aluminum Co. of America's** Massena, N. Y., operations, succeeding **John H. DeKlyn**, retired.

E. E. Saloum was promoted to chief engineer, **Snap-Tite Inc.**, Union City, Pa. He was with Aero Supply Mfg. Co. prior to 1955.

Frank H. Curran was made sales manager-northeastern division, **Chromium Mining & Smelting Corp.**, Chicago.

Frank H. McCrohan joined **Volkert Stampings Inc.**, Queens Village, N. Y., as assistant to the plant manager. He was with the product development laboratory of Sylvania Electric Products Inc.

Walter J. Plate was made manager, accessories division, **Anaconda Wire & Cable Co.**, New York.

S. Richard Childerhose was appointed sales manager, **Dynametrics Corp.**, Burlington, Mass. He was with Baldwin-Lima-Hamilton Corp. as director of defense projects at Waltham, Mass.

Ludwig Zengeler was named a vice president, NCG Div., **National Cylinder Gas Co.**, Chicago. He is succeeded by **William T. Dellinger** as general superintendent of NCG industrial gas producing plants.

Federal Pacific Electric Co. appointed **Frank S. Nelson** manager of its Scranton, Pa., plant; **Bernard G. Tremblay**, assistant plant manager, Newark, N. J., plant.

Chase Brass & Copper Co., Waterbury, Conn., subsidiary of Kennecott Copper Corp., reorganized its forgings division. **E. Rowland Chase**, formerly in charge of forgings sales at Waterbury Mfg. Co., division, transferred to the mill and warehouse sales division in the same capacity. Assisting him will be **Thomas J. Marshall.** Operating personnel of the forgings division have been retained and will be headed by **G. R. Boutin** as manager.

OBITUARIES...

Col. C. C. Chambers, president, **Texas Steel Foundry Co.**, Lufkin, Tex., which he organized some years ago, died Mar. 16.

Edmund W. Riemenschneider, former vice president - engineering, **Union Metal Mfg. Co.**, Canton, Ohio, died Mar. 6.

Herbert B. Luria, 55, president of **Luria Steel & Trading Corp.** and **Luria Engineering Co.**, New York, died Mar. 11.

Paul E. Hays, 61, superintendent of river transportation, **Crucible Steel Co. of America**, Pittsburgh, died Mar. 9.

Birth of A 20 Ton Sailor

Looks like any other *seventy-two* inch steel ingot —but is it? Trained down to fighting weight, it is a *twenty* ton sailor aboard an oil tanker . . . a ship's shaft to turn propellers against the heavy seas of the North Atlantic. Its "trainers" . . . experts in forging, heat treating, machining . . . men of long experience in quality control carefully check every step of the way to make sure it holds its "rating" in the ship's company. Steel forgings and castings for naval and maritime fleets are completed here from raw materials to shipping dock . . . have been for over three quarters of a century. Another of the many important reasons you can consult with us on *your* Steel Forging and *your* Steel Casting Components with full confidence.

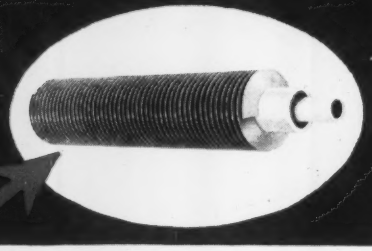
ERIE FORGE & STEEL CORPORATION

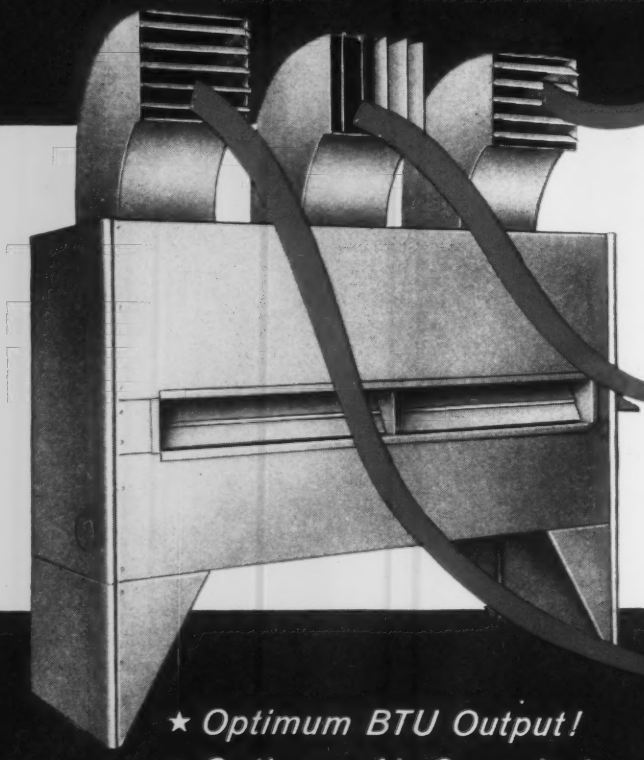
ERIE, PENNSYLVANIA

MEMBER AMERICAN IRON AND STEEL INSTITUTE

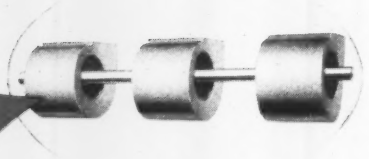
An Exclusive Design for Industrial Buildings....

WESTINGHOUSE INDUSTRIAL UNIT HEATERS





HEATING COILS — Two types: Heavy Duty (shown above) with extra heavy wrought iron finned pipe for high pressure systems or process work. General Purpose, with non-freeze, non-ferrous heating coils.



FAN ASSEMBLY — Centrifugal pressure multi-blade, die-formed type. Self-aligning, grease-lubricated ball bearings are mounted outside the casing for easy maintenance.

★ *Optimum BTU Output!*
★ *Optimum Air Capacity!*
★ *Optimum Versatility!*

ONE WARRANTY — Westinghouse makes every component — COILS, FANS, MOTORS. One supplier responsibility for quick service.

Fourteen basic coil sizes are available to give you optimum (most favorable) selection for either steam or hot water; up to 200 PSIG from 100,000 to 4,000,000 BTU/hr; air capacity for effective circulation, 2,000 to 34,000 CFM.

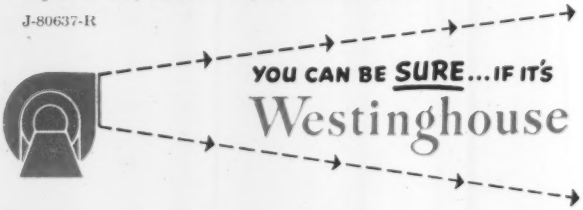
Sturdy casings, heavy-duty bearings and Westinghouse proven-plate fin-coil construction and performance give you a product to meet your most exacting application requirements.

You can't buy more rugged *quality* and *versatility* than is built into the Westinghouse line of unit heaters, designed *exclusively* for industrial applications.

Further, compact Westinghouse units can be mounted on the floor, wall or ceiling, can be relocated to accommodate changes in plant layout. And every unit is backed by a Westinghouse exclusive—*one warranty*—for engineering assistance and single equipment responsibility.

Next time you buy or specify Industrial Unit Heaters, call your Sturtevant Division Sales Engineer. For your copy of Industrial Heater Catalog 1510-2, call him now or write Westinghouse Electric Corporation, Dept. A-5, Hyde Park, Boston 36, Massachusetts.

J-80637-R



Steel Mills Expand

New facilities at Seattle and Fontana will help satisfy growing needs in Far West

STEEL MILLS in the Far West are continuing to enlarge facilities to meet the steadily growing needs of the metalworking industry in that area. In the last ten years, they have boosted their steel ingot capacity 55.8 per cent to 7,898,700 tons as of Jan. 1, 1958.

Finishing facilities also have been expanded.

Bethlehem Pacific Coast Steel Corp. has started testing the first of its two new 100-ton capacity electric-arc furnaces at its Seattle plant. Representatives of Rust Engineering Co., Pittsburgh (engineering firm in charge of the $25 million expansion program), and of Lectromelt Furnace Div., McGraw-Edison Co., Pittsburgh (furnace manufacturer), joined in the tests.

Up 70 Per Cent—It takes about 4½ hours from the time the first scrap is placed in the furnace until the molten steel is ready to pour. Steelmaking capacity of the plant will be boosted 70 per cent by the two electric furnaces (from 246,000 to 410,000 ingot tons a year). They are replacing five gas and oil fired open hearth furnaces, three of which have been dismantled. The other two are still producing steel, but will be torn down as soon as the first electric furnace is at full production.

Kaiser Steel Corp. has nearly completed a new slabbing mill building at its Fontana, Calif., plant. The structure is part of a $194-million expansion program underway at Fontana. When completed, this mill will provide slabs for the rolling mills.

Enlarges Container Plant

Vulcan Containers Ltd. completed a 30,000 sq ft extension to its plant at Toronto, Ont. The firm makes steel and tin-coated shipping containers.

To Build Oxygen Plant

Linde Co., a division of Union Carbide Corp., New York, will build an automatically operated oxygen plant at Detroit Steel Corp.'s plant in Portsmouth, Ohio. The plant will produce 20 million cu ft of gaseous oxygen a month for furnace operations and other mill activities, such as scarfing, welding, cutting, and maintenance.

Toronto Firm Expands

Eastern Power Devices Ltd., Toronto, Ont., has increased floor space of its plant by more than 130,000 sq ft. The expansion relieves crowding in the welding shop and provides area for new equipment being installed for Bonderizing and enameling.

Allied Electric To Expand

Allied Electric Mfg., Toronto, Ont., will build a 30,000 sq ft addition to its plant. The firm makes lighting fixtures.

Edgcomb Buys Warehouse

Edgcomb Steel of New England Inc., Nashua, N. H., acquired a warehouse in Slatersville, R. I., a suburb of Woonsocket. The 40,000 sq ft building will replace the Pawtucket warehouse, which will soon be closed. Aluminum, brass, stainless, and carbon steel products will be handled.

Equipment Maker Expands

Composite Forgings Inc., Detroit, has expanded its Special Machine & Fabrication Div. to specialize in the design, fabrication, and construction of heavy duty special machines and automation equipment. The newly created division is at 1469 E. Atwater St. and is headed by Henry Jessop.

Forms Special Gage Dept.

A new gage department has been established by Size Control Co., Chicago, for the manufacture of special gages and precision parts. Special gages and parts can be produced with tolerances down to 5 millionths of an inch, the firm claims. Such close tolerances are often required in the manufacture and inspection of missile, rocket, and aircraft parts. E. E. Olds is general sales manager.

Processes Zirconium Tubes

Mallory - Sharon Metals Corp., Niles, Ohio, in conjunction with Bridgeport Brass Co., Bridgeport, Conn., is processing almost 44 miles of zirconium tubing for use in Commonwealth Edison Co.'s Dresden nuclear power station near Chicago. The tubing will be shipped for fabrication to the Atomic Power Equipment Dept., General Electric Co., at San Jose, Calif., designer and builder of the station.

May Build Culvert Plant

Wheeling Corrugating Co., a subsidiary of Wheeling Steel Corp., Wheeling, W. Va., plans to erect a culvert manufacturing plant on a recently purchased site near Philadelphia. A starting date has not been set.

Allis-Chalmers Buys Line

Allis-Chalmers Mfg. Co., Milwaukee, acquired all the machinery, equipment, inventories, and patents relating to diesel fuel injection systems from Micro-Precision Div., Micromatic Hone Corp., Evanston, Ill. Micro-Precision Div.'s aircraft activities have been transferred to Micromatic Hone's Los Angeles plant. All elements in the purchase will be transferred to Allis-Chalmers' plant in Harvey, Ill.

Tube Firms Sign Pact

Western Pneumatic Tube Co., Kirkland, Wash., and Superior Tube Co., Norristown, Pa., have become associated for the purpose of exchanging technical and marketing information. Western pneumatic specializes in the production of extremely thin-wall tubing and has developed unique equipment and processes for this work. Under the agreement, Superior will help Western Pneumatic get wider distribution of its products.

Schedules Plant Opening

Sherwin-Williams Co., Cleveland, plans to start operating its new facilities for the production of high-grade barium monohydrate this fall. The plant is being built at Coffeyville, Kans. Bunker Hill Co., San

(*Please turn to Page* 92)

designed for...
BARBER
COLMAN

. . . precision instrument gears

new Barber-Colman hobber guaranteed to index accurately within 20 seconds of arc

Barber-Colman engineers have developed a new hobbing machine which guarantees indexing accuracy suited to gears used for aircraft, missile and radar guidance systems. This machine is known as the No. 2½ - 4 hobbing machine and hobs precision spur gears up to 2½" diameter x 4" length, 30 D.P. in steel and 20 D.P. in brass. It provides accuracy, capacity and rigidity for precision fine-pitch work within a nominal price range.

One of the most important features of the new No. 2½ - 4 hobbing machine is the accuracy of relative rotation between the work spindle and the hob spindle which is guaranteed within 20 seconds of arc. This means that the spacing error on the gear caused by the indexing error of the machine would not exceed .00014" on a 2½" diameter gear.

The machine has a capacity for using 3" diameter hobs providing for a greater number of flutes to produce smooth gear tooth profiles. Using proper care in rigid tooling, accurate blanks, mounting of hob and work, and Class AA hobs with accurate sharpening, precision gears to Class 3 tolerances are hobbed with this machine.

Several design features are a departure from standard hobbing machine construction. There is no hob slide — only a hob carriage for conventional feed. In place of a hob slide, the hob arbor is mounted on a swivel which adjusts to compensate for hob thread angle. The work slide is stationary, and the hob swivel raises and lowers to meet diameter requirements. The machine has no overarm support, permitting greater work visibility and operator access. Both work and hob spindles are mounted in precision anti-friction bearings to provide accurate rotation at high speeds. The hob carriage also has anti-friction way supports, and the metal-to-metal contact afforded provides more rigidity than obtained with gib-type mounting. An infinite number of hob speeds are provided without change gears in the range of 200 to 1200 r.p.m.

Rigidly constructed, with a steel weldment base and heavy grey iron machine bed, the machine is designed with a minimum number of parts at points where deflection and inaccuracies may occur. Net machine weight without tooling is approximately 1500 lbs. Standard equipment includes motor and controls and one set of change gears.

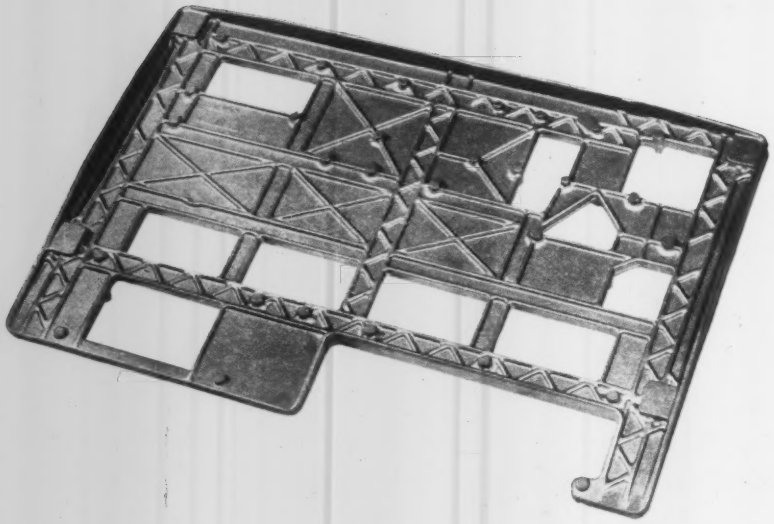
For complete specifications and data contact your nearest Barber-Colman representative, or write directly to the factory for a copy of new bulletin F-8642. Orders are now being booked for July and August deliveries.

BARBER-COLMAN COMPANY

733 ROCK STREET • ROCKFORD, ILLINOIS

Hobs • Cutters • Reamers • Hobbing Machines • Hob Sharpening Machines

BARBER COLMAN



EXCELLENT BASE FOR PROFITS

This ninety-six pound casting was made for the National Cash Register Co. of Nodulite®, Hamilton Foundry's ductile iron. The casting forms the base for the new Post-Tronic Accounting Machine. It measures 37½" by 23½" with sections varying from ¼" to 1½". Ductile iron was chosen for this part because of its ductility, dimensional stability, rigidity, and machinability.

Sharp pencil buyers know that the *ultimate* cost of a casting rather than the purchase price is most important to the cost of the end product. Dimensional accuracy, uniform machinability, fine surface finish, low rejects and delivery of orders on schedule result in castings at lowest ultimate cost and insure your reputation for product quality.

When new and unusual design problems arise in the selection of metal and the casting of parts, you will find that the skill and integrity of your foundry is your best insurance that specifications—and delivery schedules—will be met.

GRAY IRON • ALLOYED IRON • MEEHANITE® • DUCTILE (NODULAR) IRON • NI-RESIST • DUCTILE NI-RESIST • NI-HARD

HAMILTON FOUNDRY

The Hamilton Foundry & Machine Co., 1551 Lincoln Ave., Hamilton, Ohio • TW 5-7491

(*Concluded from Page 89*)

Francisco, producer of zinc and lead, has a 25 per cent participation in the installation. The chemical will be marketed at the going price of barium oxide on an available barium basis.

Roebling Installs Cabler

John A. Roebling's Sons Corp. has installed a large cabling machine in its Trenton, N. J., plant. The planetary horizontal cabler will enable the firm to produce longer electrical power cables and a wider range.

Buys Truck Rental Firm

Industrial Truck Div., Clark Equipment Co., Buchanan, Mich., purchased Lift Truck Rental Corp., New York, and has formed a new subsidiary, Clark Rental Corp., to rent fork lift trucks and other material handling equipment.

Toledo Foundry To Close

American Brake Shoe Co., New York, plans to close its brake shoe foundry in Toledo, Ohio, on Mar. 28. Company officials say the volume of brake shoes required by railroads served by the plant has been declining steadily and that the plant has been operating on a reduced schedule.

Milwaukee Gear Expands

Milwaukee Gear Co., Milwaukee, is building an addition to its plant to house a heat treating department. John Lotter will be in charge of the department.

ASSOCIATIONS

Albert R. Cook has been named market development engineer for the **American Zinc Institute Inc.**, New York. Mr. Cook was formerly sales development engineer for Northern Aluminium Co. Ltd., Banbury, Oxfordshire, England.

Cast Bronze Bearing Institute has been organized by producers of finish machined, cast bronze bearings. Founding firms have subscribed to a fund to start a re-

You get all 5 with Polyken® masking tape

1. Easy unwind
Saves time . . . comes off roll without hard pull. Tears cross-wise readily.

2. Quick adhesion
Sticks tight with only a slight touch . . . won't slip or curl back. Resists moisture, too.

3. Conformability
Flexible even on extreme curves. Crepe backing gives extra stretch needed at sharp angles without being rough on the hands.

4. Extreme thinness
No paint build-up during spraying operations.

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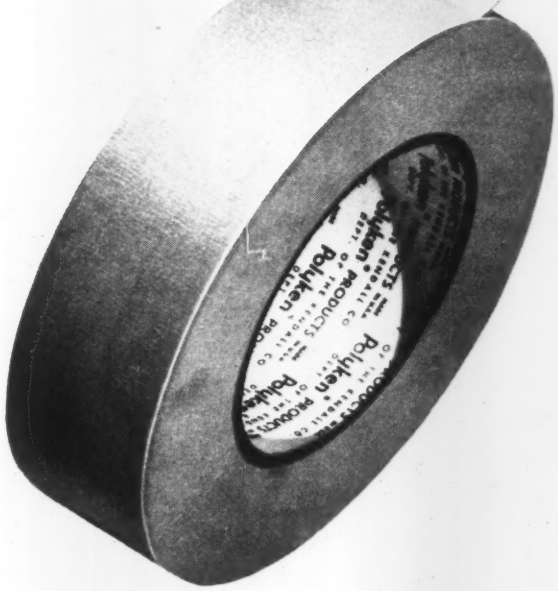
Unaffected by forced heat drying. Leaves sharp edge without any sticky residue.



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Polyken®

INDUSTRIAL TAPES

THE KENDALL COMPANY
Polyken Sales Division

EARLY BIRD PLANNING PAYS OFF IN GAGING, TOO!

So many times important money can be saved in the production of a product or part by considering, in the blueprint stage, how its dimensional quality is to be controlled.

One manufacturer who had a tough gaging problem recently eliminated plenty of potential inspection trouble by doing just that. Here's how it paid off . . . Federal gaging engineers showed him how adding a reference block at the right spot made it possible to determine difficult, close tolerance dimensions without resorting to highly complex measurements . . . and also how this block, with other gaging, could be used to check and maintain highly accurate table travel on the machine. Then they showed him a new idea in gage portability and handling which would cut important hours out of set-up time.

Here Federal performed the kind of real service that is possible when its gaging specialists are called in as a *fore*thought — at a time when gaging can be planned to produce maximum results as a *production* tool. And it's in this way that precision gaging can do *you* the *most* good! As in the case above, it can be very helpful to call upon Federal's specialized experience.

There are many things to consider in deciding *what* gages are to be used *where*, and *how*, particularly if you want maximum returns in production costs savings. Usually the answer is not obvious. An important part of our service to you can be in helping you decide.

There's a Federal representative nearby. Contact him and write for our free booklet "Management Blind Spot."

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8213 Eddy Street Providence 1, R. I.

Ask **FEDERAL** *First*

FOR RECOMMENDATIONS IN MODERN GAGES . . .

Dial Indicating, Air, Electric, or Electronic—for Inspecting, Measuring, Sorting, or Automation Gaging

search program immediately at the Franklin Institute, Philadelphia. Officers are: President, G. F. Langford, Superior Kendrick Bearings Inc., Detroit; vice president, W. H. Crossman, Randall Graphite Bearings Inc., Lima, Ohio; and secretary-treasurer, C. N. Paden Jr., Moccasin Bushing Co., Chattanooga, Tenn. Herbert F. Schobie, 1604 Chicago Ave., Evanston, Ill., is executive secretary. The institute has voted to affiliate with the Non-Ferrous Founders' Society as a division of that organization.

NEW PLANTS

U. S. Metal Coatings Co. Inc. moved into its new plant at 224 Lincoln Blvd., Middlesex, N. J. Facilities include equipment for grinding, polishing, and other finishing operations, as well as for copper plating and precision finishing of gravure and printing rolls.

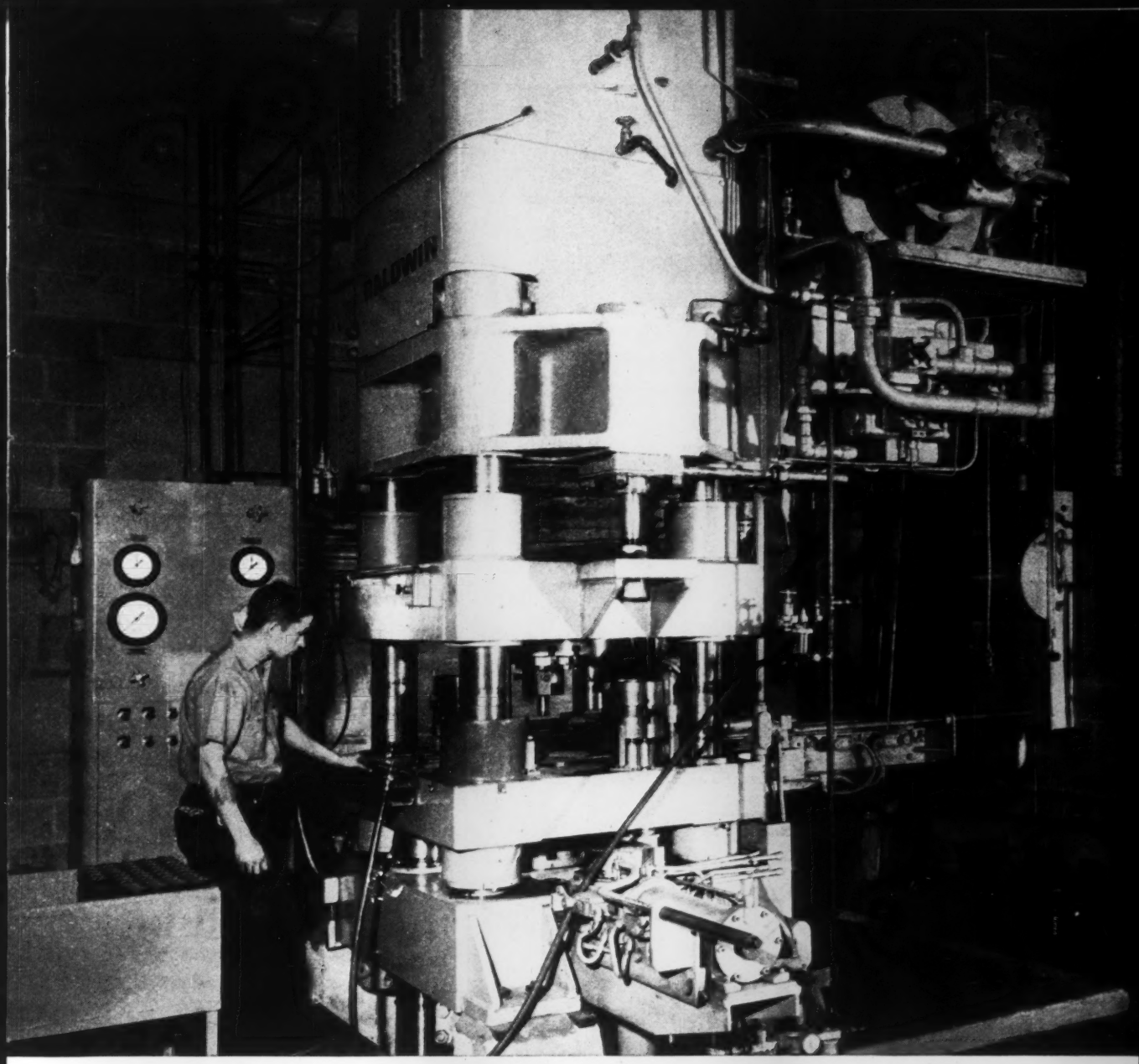
Anchor Steel Warehouse Inc. is building a $300,000 warehouse on a tract adjoining its present facilities at 1601 W. 25th St., Kansas City, Mo. The firm specializes in hot-rolled steel products and cold-drawn bars. Complete cutting, shearing, and burning facilities are available.

Beals, McCarthy & Rogers Inc., Buffalo, a steel warehouse and industrial supply concern, opened a branch warehouse at Niagara Falls, N. Y. Thomas O'Neal is in charge.

Vagabond Coach Mfg. Co., Brighton, Mich., is building a trailer coach manufacturing plant at Alexander City, Ala. Completion is scheduled this summer.

E. H. Sargent & Co., Chicago, manufacturer of scientific laboratory equipment is building a 37,000 sq ft plant at Springfield, N. J. It will be headquarters for the combined eastern sales and distribution facilities.

Fansteel Metallurgical Corp., North Chicago, Ill., formally opened its tantalum-columbium plant near Muskogee, Okla. Four buildings house about 95,000 sq ft of floor space. Liquid reagent



New Baldwin hydraulic press

Combines high tonnage capacity with multiple motions normally found in small presses

Pictured above is a new 500-ton-capacity Hamilton hydraulic compacting press now in operation at the Burgess-Norton Mfg. Co., Geneva, Ill. Designed for compacting powdered metals, the new press embodies these features proven desirable in Baldwin's line of smaller presses:

Floating die • Automatic cycling • Die float control
Shuttle feeder • Accurate load downstops

These motions are made possible even in high tonnages at relatively low cost. The press features convenient control of the forces being exerted—and accurate control of the finished size of the part being formed.

This Hamilton compacting press is also made in 300, 750 and 1000-ton capacities. Write today for complete details, including specifications.

Please address inquiries to Dept. IC

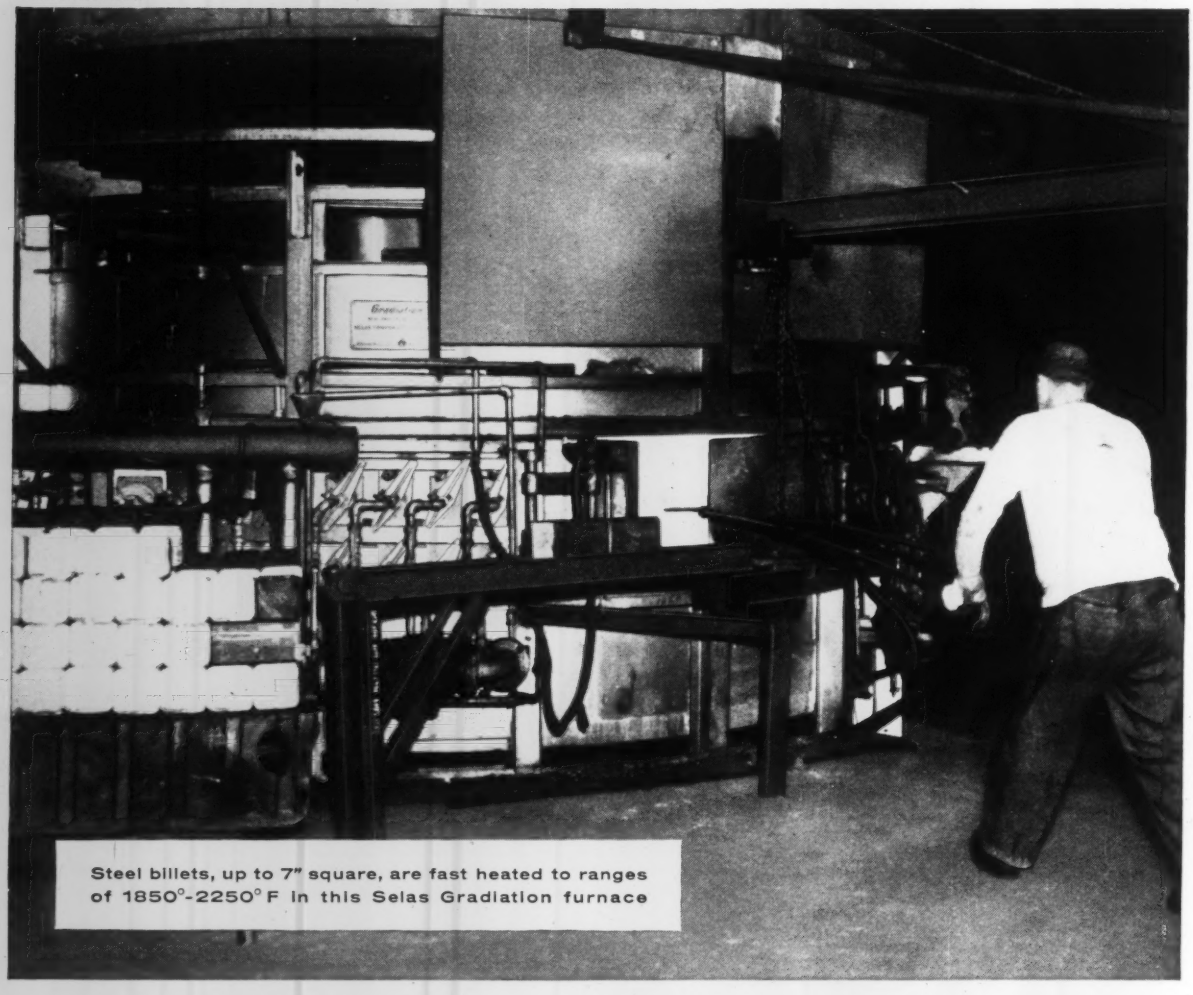
Hamilton Division Hamilton, Ohio

BALDWIN · LIMA · HAMILTON

Diesel engines • Mechanical and hydraulic presses • Can making machinery • Machine tools

BALDWIN BLH LIMA-HAMILTON

(Advertisement)



Steel billets, up to 7" square, are fast heated to ranges of 1850°-2250° F in this Selas Gradiation furnace

FAST HEATING WITH *GAS*

- improves forgeability
- reduces power requirements
- increases metal flow

A Gas-fired Gradiation® furnace designed and built by Selas Corporation for Lansdowne Steel and Iron Company, Morton, Pennsylvania heats billets to 1850°-2250° F at rates of 2 to 5 minutes per inch of thickness—thus virtually eliminating scale. Some fast heated billets are forged at temperatures 300° F below conventional methods.

Improved forgeability, directly attributable to fast heating with Gas, reduces power requirements at the usual forging temperatures. Or, for given power applied, permits an increase in the amount of flow or deformation.

For information on how Gas equipment can help you in your production operations, call your Gas Company's industrial specialist. He'll be glad to discuss the economies and outstanding results you get with Gas and modern Gas equipment. *American Gas Association.*

chemicals are stored in outdoor tanks. The plant was designed to increase the firm's productive capacity for tantalum by 50 per cent and for columbium by 150 per cent. Cost, including equipment: About $6.5 million.

Haverly Equipment Div., John Wood Co., Conshohocken, Pa., is operating its new plant at Royersford, Pa., producing bulk milk coolers. Haverly's Syracuse, N. Y., plant discontinued production the first of the year, but a warehouse and branch sales office are maintained in that city.

Walker Mfg. Co. of Wisconsin, Racine, Wis., plans to occupy a plant at Aberdeen, Miss., for the production of automotive exhaust and tail pipes. The 140,000 sq ft plant will be leased from the City of Aberdeen under a Mississippi state development program.

Gotham Chalkboard & Trim Co. Inc., New Rochelle, N. Y., has started operating its plant at Marked Tree, Ark. It will make chalkboards, corkboards, and aluminum trim, and framing accessories. The firm is also distributor and fabricator of the porcelain enameled chalkboards made by Ingram-Richardson Mfg. Co., Beaver Falls, Pa.

Davison Chemical Co., a division of W. R. Grace & Co., Baltimore, is producing nuclear reactor feed materials at its new plant at Erwin, Tenn. The plant is considered a major advance in the practical development of nuclear power by private capital. It is equipped to provide whatever is specified in the way of uranium or thorium materials for nuclear power. It is also equipped to produce metallic materials for nonnuclear applications. Among such materials are thorium metal, a master alloy of thorium and magnesium.

NEW OFFICES

Aluminum Co. of America, Pittsburgh, established a sales office in the First National Bank Bldg., Phoenix, Ariz. R. C. Benedict has been named resident representative.

(*Please turn to Page* 100)

"POP"® RIVETS

can probably save you money . . .

Even if your present fasteners are free!

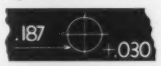
Greater Design Flexibility
No need for access to both sides.

High Clinching Action
Exerts as high as 600 pounds squeeze between parts.

Wide Grip Range
Same length "POP" Rivet holds tight through thick or thin.

Vibration Proof
"POP" Rivets cannot back out or become loose. No lock washers or nuts required.

Low Head Profile
Where space is important, "POP" Rivets' minimum head height is the answer.



Less Critical Hole Diameter
Designer wants holes tight, production wants holes larger. "POP" Rivets make both happy.

Least Back-Up Space
Strong, high grip "POP" Rivets need only enough back-up space to provide room for set head.

When buying fasteners, do you figure the *installed costs?* A fastener considered alone may cost very little but be very expensive by the time it's installed and becomes part of a finished product.

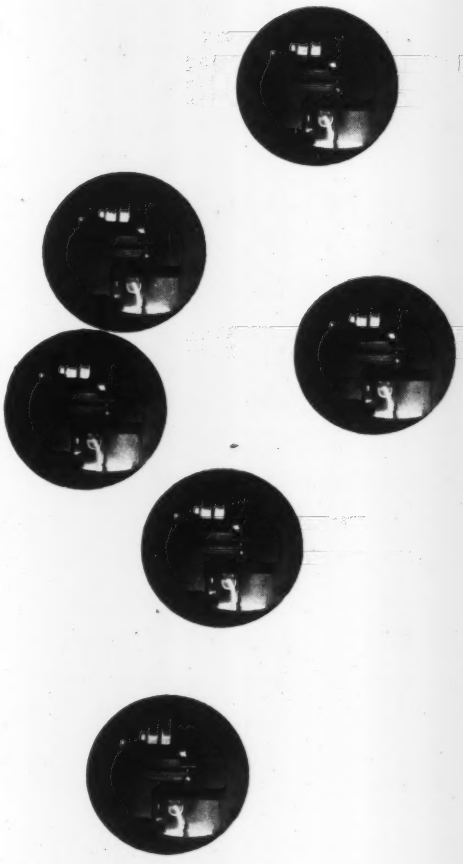
"POP" Rivets afford greater flexibility in product design. Often operations can be eliminated, assembly costs reduced, and speed of fastening increased.

Many users find high strength "POP" Rivets the most efficient and economical fastener for their product. Investigate its use in your application. Perhaps you too can enjoy the many advantages "POP" Rivets have to offer. Write us today.

"POP" RIVET
DIVISION
UNITED SHOE MACHINERY CORPORATION
West Medway, Mass.

YOU'VE RELIED UPON THIS MARK FOR *QUALITY*...

now... look to it for a new solution to your steel inventory problems



Here's how Carpenter's *doubled capacity* will help you keep steel inventories at *realistic levels* and cash tie-ups *at a minimum*, through both high and low demand periods:

You know the cost of excessive inventories. You tie up cash precisely when you need it most. Large inventories cost much more to carry than the inventory you actually need for current production.

Now . . . through Carpenter's acquisition of electric furnace steelmaking facilities in New England (which *doubles* our ingot capacity) we've approached this problem from *your* side of the fence.

Today, you're doing business with a company *twice* as big as it was a year ago. This permits us to provide a plan by which customers can *reserve mill output ahead* of time . . . eliminating the need to protect yourself by ordering far ahead . . . eliminating the necessity for placing excessively large orders in periods of peak demand.

And if you order steel out of local warehouse stocks, this same plan assures continuous, dependable deliveries.

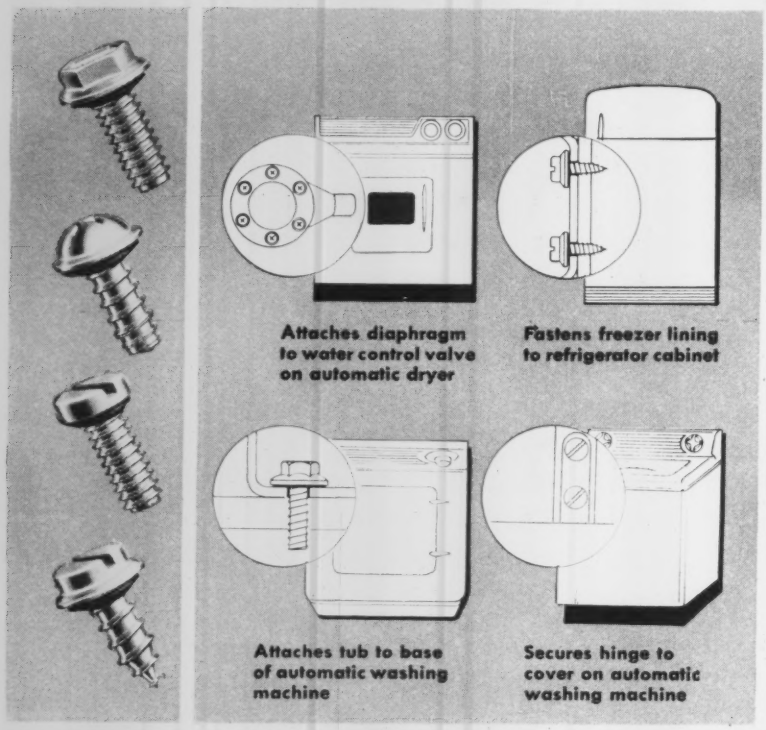
Now, and when steel demand is again on the upswing, we are putting steel "in the bank" for you. We are carrying extra large stocks of semi-finished steel in reserve . . . enough to take care of emergencies for all customers subscribing to the plan. Moreover, we can offer this plan to *more* steel users than ever before!

Today, while we're implementing this new service, is the time to go along with us. By acting now, you assure yourself of a steady supply of Carpenter top quality Tool, Stainless and Alloy steels right through the next period of peak demand.

This is our vote of confidence in *your* future. It's one more example of a forward-thinking program of Carpenter service designed with *your* needs in mind.

The Carpenter Steel Company, Main Office and Mills, Reading, Pa.

Alloy Tube Division, Union, N. J.
Carpenter Steel of New England, Inc., Bridgeport, Conn.
Webb Wire Division, New Brunswick, N. J.


Attaches diaphragm to water control valve on automatic dryer
Fastens freezer lining to refrigerator cabinet
Attaches tub to base of automatic washing machine
Secures hinge to cover on automatic washing machine

Townsend *Tuff-Tites*®

Offer Appliance Manufacturers Lower Costs and Superior Performance

Leading appliance manufacturers are cutting production costs and improving their products by adopting Townsend Tuff-Tite fasteners. The one-piece head and washer construction of Tuff-Tites eliminates a major source of leakage. The additional pre-assembled neoprene washer not only serves to eliminate leakage, but also protects porcelain enamel surfaces from scratches and mars. Since they are resistant to vibration, Tuff-Tites have any number of applications in the appliance field.

If you have a fastening problem, Townsend specialists will be glad to make recommendations as to the proper Tuff-Tite to meet your needs. If a standard item cannot be used, Townsend engineers will design a custom-made fastener to answer your purpose.

For complete information, write to Townsend Company, P.O. Box 237C, New Brighton, Pennsylvania.

The Fastening Authority

Townsend

COMPANY • ESTABLISHED 1816

NEW BRIGHTON, PENNSYLVANIA

Sales Offices in Principal Cities

Cherry Rivet Division • Santa Ana, California

In Canada: Parmenter & Bulloch Manufacturing Company, Limited, Gananoque, Ontario

(*Concluded from Page 97*)

C. R. Boyle, Los Angeles, is district sales manager.

Walworth Co., New York, opened a building on Route 8, Glenshaw, Pa., to house sales and distribution offices of its Central Div. The firm makes valves and pipe fittings.

Steel Div., Kerotest Mfg. Co., Pittsburgh, established a district sales office and warehouse at 3151 E. 12th St., Los Angeles 23, Calif.

CONSOLIDATIONS

Midland-Ross Corp., Cleveland, acquired **Hartig Engine & Machine Co.**, Mountainside, N. J., producer of machinery to extrude plastics. Edward Greene, president of Hartig, will continue as the operating head of the newly acquired company. It will become a division of Midland-Ross.

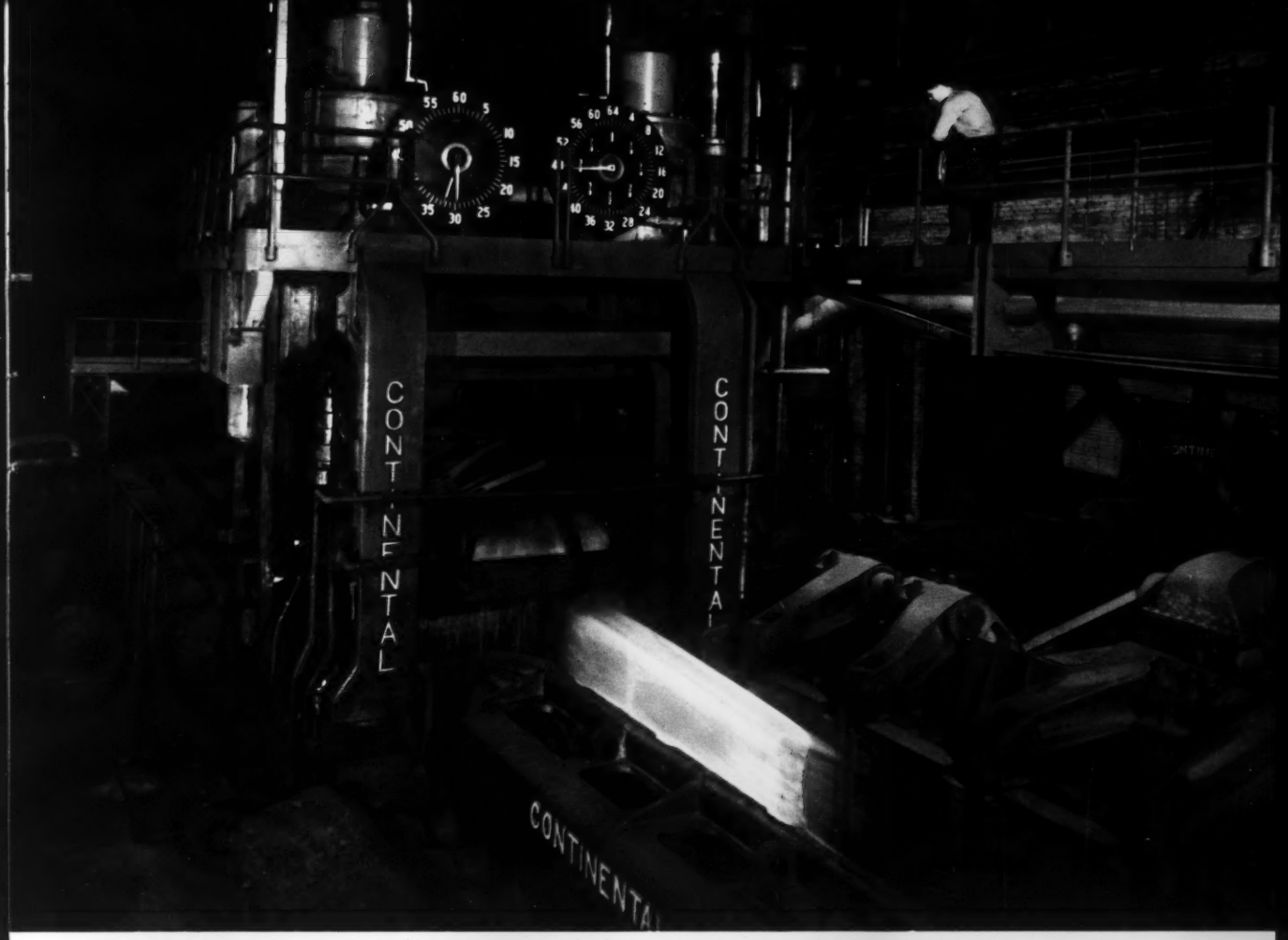
Mueller Brass Co., Port Huron, Mich., purchased **American Sinteel Corp.**, Yonkers, N. Y., producer of powder metal parts from various alloys of iron, steel, brass, bronze, copper, nickel, and nickel-silver. Equipment for production of powder metal parts in the Port Huron plant will be moved to Yonkers.

International Silver Co., Meriden, Conn., purchased **Eyelet Specialty Co.**, Waterbury, Conn., maker of electrical items and lipstick cases.

United States Chemical Milling Corp., Manhattan Beach, Calif., acquired **Missile-Air**, Los Angeles, manufacturer of intricate airborne and spaceborne components, as well as producer of ground handling equipment, missile and aircraft fuel tanks, control apparatus, flush latch fasteners, subassemblies, and subsystems.

Capital Brass & Aluminum Foundry Co., Chicago, purchased **Smeeth-Harwood Co.**, that city, and will operate the property as a division.

Fyr-Fyter Co., Dayton, Ohio, purchased **Globe Automatic Sprinkler Co.**, Philadelphia. Globe's line will be integrated with Fyr-Fyter's in the fire protection field.



46-inch high lift slabbing-blooming mill

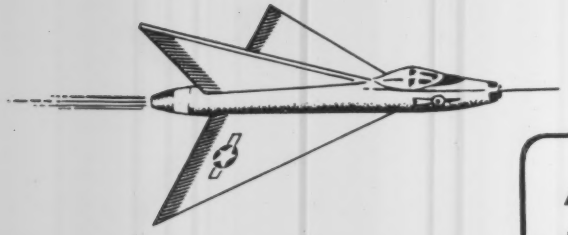
BLAW-KNOX SLABBING-BLOOMING MILLS

Blaw-Knox designs and builds slabbing-blooming mills in a complete range of sizes in high-lift and universal types. Other Blaw-Knox equipment for metals industry includes complete rolling mill installations including all auxiliary equipment for ferrous and non-ferrous metals, iron, alloy iron and steel rolls, Medart cold finishing equipment, carbon and alloy steel castings, fabricated steel plate or cast-weld design weldments, steel plant equipment, and heat and corrosion resisting alloy castings.

BLAW-KNOX

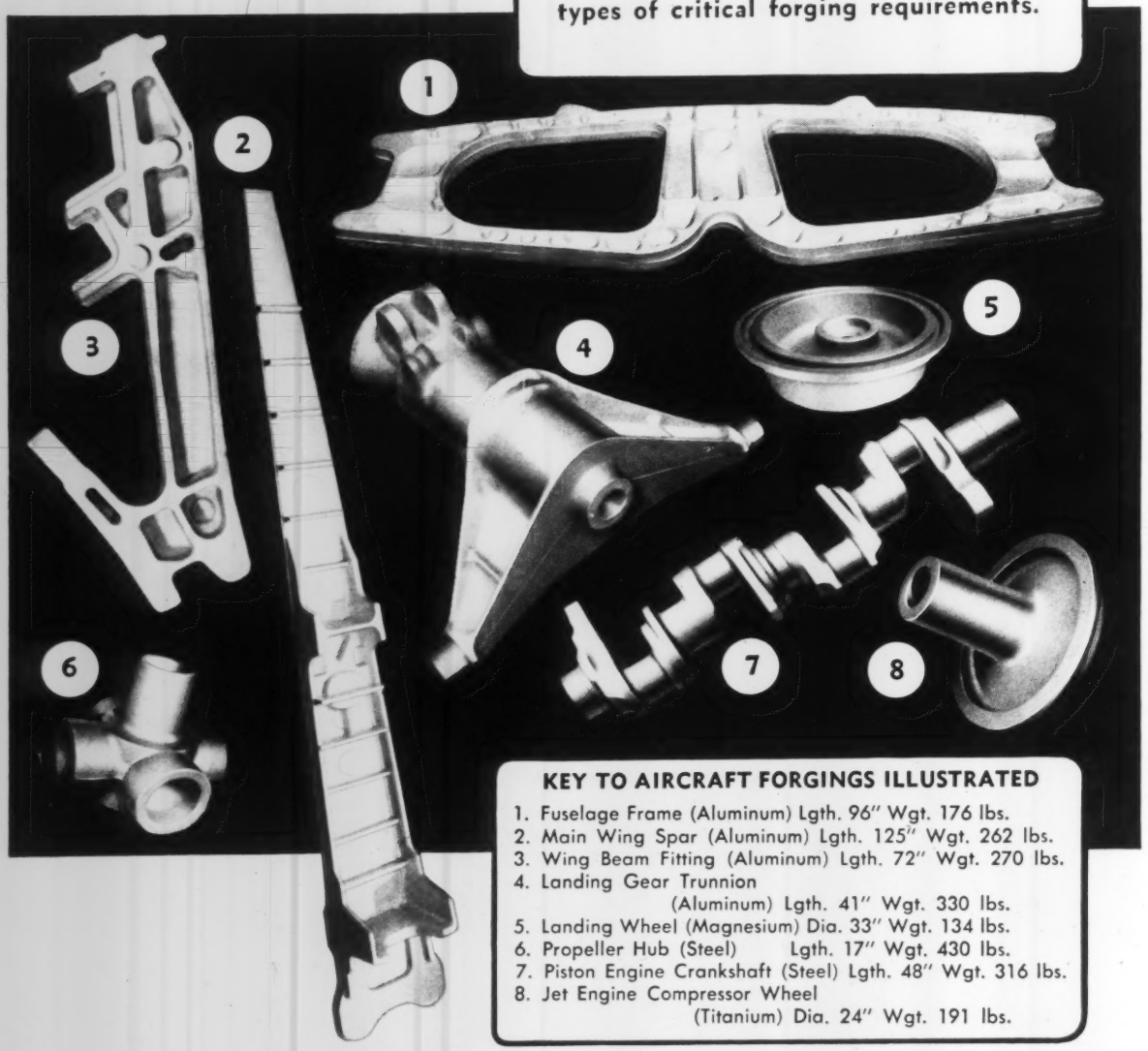
BLAW-KNOX COMPANY

Foundry and Mill Machinery Division
Blaw-Knox Building • 300 Sixth Avenue
Pittsburgh 22, Pennsylvania



DEPENDABILITY...

Aviation engineers and designers since the beginning of the Aircraft Industry have relied on Wyman-Gordon for all types of critical forging requirements.



KEY TO AIRCRAFT FORGINGS ILLUSTRATED

1. Fuselage Frame (Aluminum) Lgth. 96" Wgt. 176 lbs.
2. Main Wing Spar (Aluminum) Lgth. 125" Wgt. 262 lbs.
3. Wing Beam Fitting (Aluminum) Lgth. 72" Wgt. 270 lbs.
4. Landing Gear Trunnion (Aluminum) Lgth. 41" Wgt. 330 lbs.
5. Landing Wheel (Magnesium) Dia. 33" Wgt. 134 lbs.
6. Propeller Hub (Steel) Lgth. 17" Wgt. 430 lbs.
7. Piston Engine Crankshaft (Steel) Lgth. 48" Wgt. 316 lbs.
8. Jet Engine Compressor Wheel (Titanium) Dia. 24" Wgt. 191 lbs.

WYMAN-GORDON COMPANY

Established 1883

FORGINGS OF ALUMINUM • MAGNESIUM • STEEL • TITANIUM

WORCESTER 1, MASSACHUSETTS

HARVEY, ILLINOIS • DETROIT, MICHIGAN

Technical Outlook

MORE METAL RESEARCH— The Navy's Bureau of Ordnance has awarded a $163,409 contract to General Electric Co. for research on warm working and vacuum melting of ultrahigh strength steels. The University of California will get $146,845 from the Navy to find basic factors affecting the strength of metals.

FIRE-RESISTANT FLUID— A 10,000 - gallon tank car shipment of Pydraul, a fire-resistant hydraulic fluid, is pointed out by Monsanto Chemical Co., the maker, as evidence that such fluids are really catching on. The big order went to an Alcoa installation. Monsanto says it's the biggest single order for that type fluid placed anywhere.

HARNESSING SUN'S RAYS— A giant solar furnace, capable of producing temperatures comparable to those generated by an atomic explosion, will be erected by the Army at the Quartermaster Research & Engineering Center, Natick, Mass. It will be used to test materials designed to protect military personnel against the thermal effects of nuclear weapons.

MIRROR ALUMINUM FINISH—Alcoa has introduced an aluminum sheet that can be polished, brightened, and anodized to a superbright finish. Designated Alloy X5457, the product is expected to catch on in the automotive and appliance industries. It has mechanical properties similar to those of Alloy 5357.

GLASS HEAT— Bal-Tate Furnace Co. of Royal Oak, Mich., is marketing a furnace with a liquid glass bath for heating ingots before extrusion. The furnace, an Italian development, has a revolving drum heating chamber.

TITANIUM HARDENS COPPER—A cast copper alloy containing 6 per cent titanium has heat treated tensile properties exceeded only by beryllium copper, states an Army Ordnance research report. Optimum mechanical properties were obtained after solution treating at 1625° F, water quenching, then age hardening at 800° F. Average properties: Ultimate strength, 121,000 psi; yield strength, 107,000 psi; elongation, 8 per cent; reduction in area, 18 per cent. The research was initiated to study the possibility of using titanium scrap as a hardener for metal alloys.

MISSILES GET SUPERBEARINGS— Miniature ball bearings for missile instruments must have a superior finish and improved resistance to corrosion. That's why Fafnir Bearing Co., New Britain, Conn., says it turned to vacuum melted 440-C stainless. The combination of metal and new centerless internal and external grinders is said to produce bearings with perfect race geometries.

IRON WELLS— "We have discovered pockets of white-hot iron under tremendous pressure far below the earth's surface," says William W. Swenson of Bell Aircraft Corp. in describing findings of the International Geophysical Year. He suggests that some day we may be able to drive deep wells to bring this metal to the surface in a molten condition.

GAMMA RAY GUARDIAN—A gamma ray source and a Geiger counter team up to make a safety device for coke ovens. When rays from the gamma emitter on the exit side of the coke oven can be detected by the counter on the pusher machine, everything is lined up and the doors are opened for the coke push. Interlocks make the system foolproof.

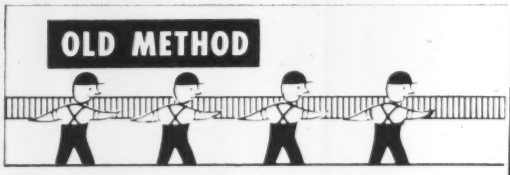
GAS TURBOBLOWERS— Gas turbine engines, powered by blast furnace gas, may someday be turning blast furnace blowers in American steel plants. Such engines are being used in Europe. Although blast furnace gas provides only one-tenth the heat value of natural gas, it is an excellent gas engine fuel, says Z. Stanley Stys, vice president of Brown Boveri Corp. of New York.

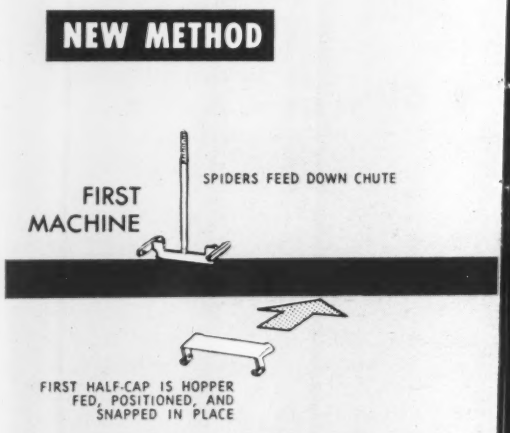
THE PROBLEM:

Hold the consumer price of safety razors at $1, despite rising costs and inflation.

THE SOLUTION:

Automatic assembly—building the razor from seven components on two machines





COST CRISIS . . . How To Beat It

Automatic Assembly Trims Costs 30%

Two machines build 15,000 safety razors a day. Feeding, inserting, and threading are done automatically—a single manual operation connects the two machines

SAVED:

Release of 15 operators from a conveyor-line assembly job resulted in a 30 per cent reduction in unit assembly costs.

COST CUTTING is a never-ending challenge of producers for the low-priced consumer goods market.

Gillette Safety Razor Co., Boston, is typical of the economy-minded industry. Heads of engineering and production offer this example: About two years ago, the firm's production and engineering people sought new costs to conquer after they had pushed the efficiency of part production to a high peak. Assembly was their next goal.

Old Method—Assemblers sat beside a conveyor belt. As parts came to them, they picked them off the belt, attached a component by hand, then put the part back on the belt for transfer to the next worker.

The process was efficient, but the human element put limits on its speed and precision.

New Method — Two automatic machines build 15,000 medium razors daily.

The first machine builds the half-cap assembly. Spiders are manually fed into a chute; as they move across the machine, vibrating feeders supply two half caps which are positioned and sprung into place on the spiders. Output is 60 parts a minute.

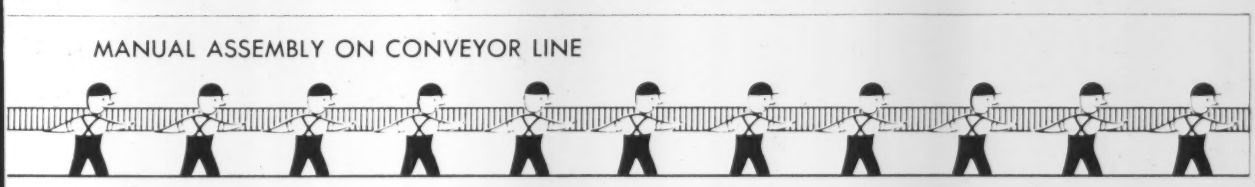
The assemblies are hand loaded into magazines, and the magazines are used to feed the second machine.

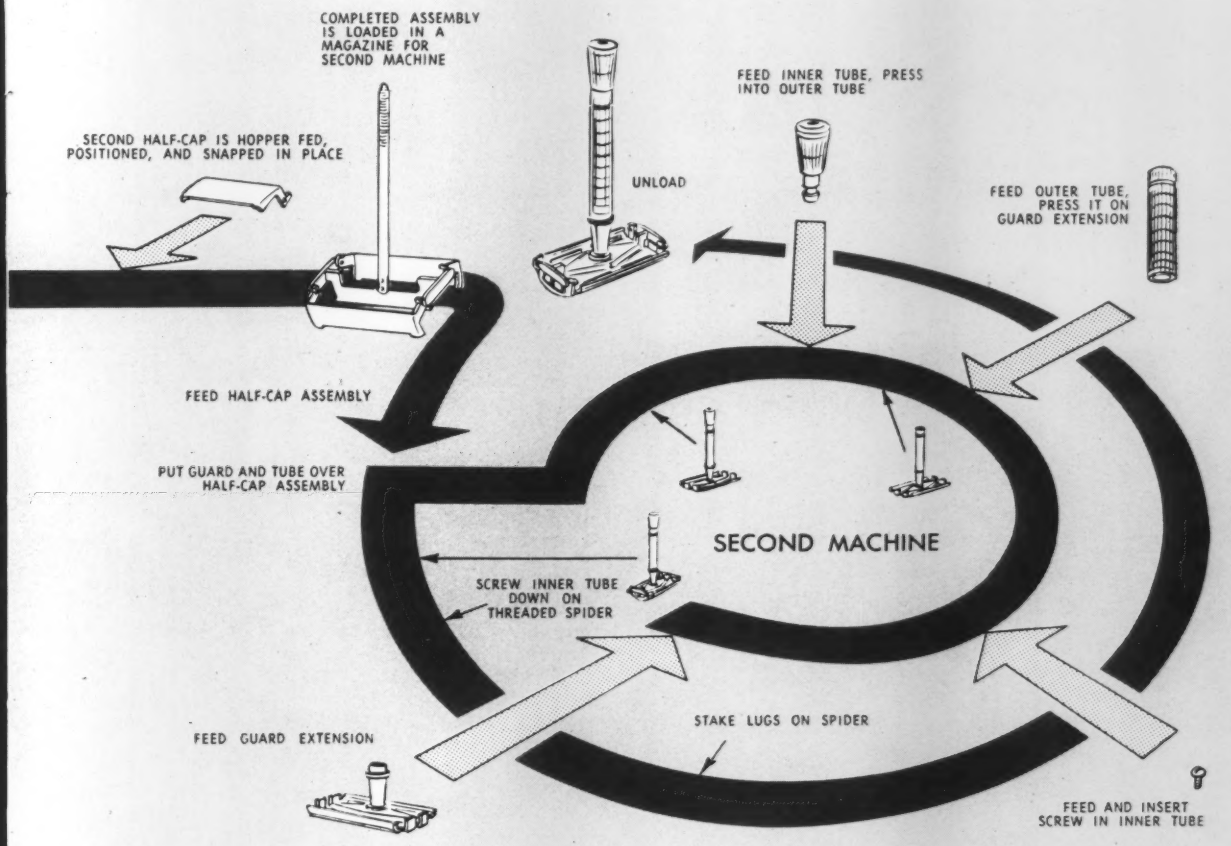
Complete razors are built on the second machine. A rotary indexing unit, it has an inner and outer ring of work holders, with 16 fixtures in each. Heads that perform the assembly operations are mounted on pedestals outside of the indexing turret.

Four vibrating feeders put the guard extension, outer tube, inner tube, and screw into the half-cap assembly.

Half-cap assemblies are fed directly from the magazines.

Most of the stations are air operated and electrically controlled. Limit switches and electrical interlocks prevent the machine from indexing and feeding new parts if the moving elements at each station fail to return to their starting position




COMPLETED ASSEMBLY IS LOADED IN A MAGAZINE FOR SECOND MACHINE
SECOND HALF-CAP IS HOPPER FED, POSITIONED, AND SNAPPED IN PLACE
UNLOAD
FEED INNER TUBE, PRESS INTO OUTER TUBE
FEED OUTER TUBE, PRESS IT ON GUARD EXTENSION
FEED HALF-CAP ASSEMBLY
PUT GUARD AND TUBE OVER HALF-CAP ASSEMBLY
SECOND MACHINE
SCREW INNER TUBE DOWN ON THREADED SPIDER
STAKE LUGS ON SPIDER
FEED GUARD EXTENSION
FEED AND INSERT SCREW IN INNER TUBE

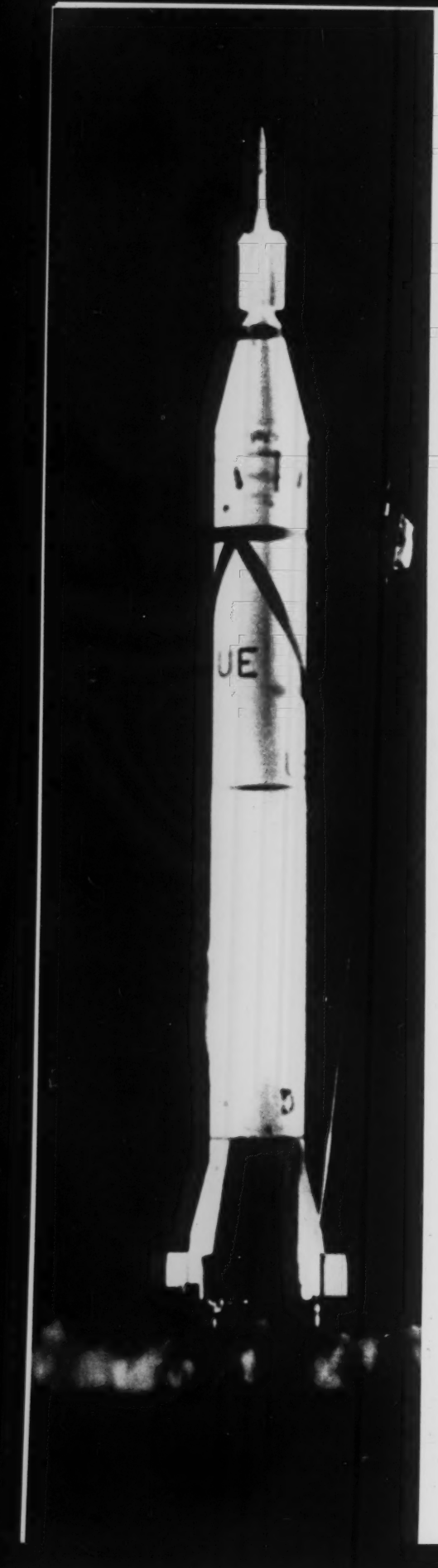
at the end of the cycle, or if a work fixture is empty.

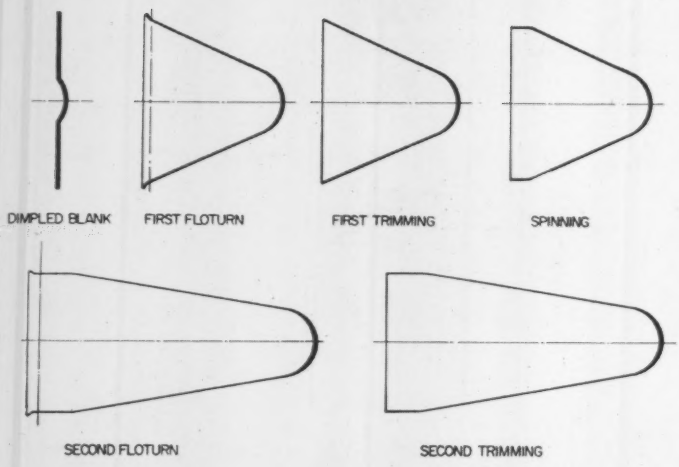
Output of the second machine is 30 parts a minute. Finished parts empty on a conveyor that takes them to inspection.

Selling the Idea—The case for automatic assembly was carefully prepared by departments concerned before it was presented to Gillette's management. First step was to check out the feasibility of the proposed move with specialists—engineers at Swanson-Erie Corp., Erie, Pa. Subsequent investigation led to the preparation of preliminary plans and estimates. Potential savings were stressed in the presentation made to management.

COST CRISIS COMPETITION

This article is part of a campaign to help industry achieve lower unit production costs. The accompanying example and others to follow are samples of what the editors of STEEL are looking for in their nationwide search for companies that have brought about important cost savings through more efficient use of capital equipment. Does your company qualify? If so, enter the Cost Crisis Competition. Write to the Cost Crisis Editor, STEEL, Penton Bldg., Cleveland 13, Ohio, for your awards kit.





Steps in making the satellite nose cone. It required two Floturning operations with a stress relief in between

Forming the Explorer's Nose

A thin cone of stainless steel, it was cold formed on a Floturn machine. Result: A light, strong shape that resists atmospheric corrosion and temperature extremes

ONE of the newer tools of metalworking added the strength and hardness needed by the nose cone of the Army's satellite to protect vital instruments during its ascent through the atmosphere.

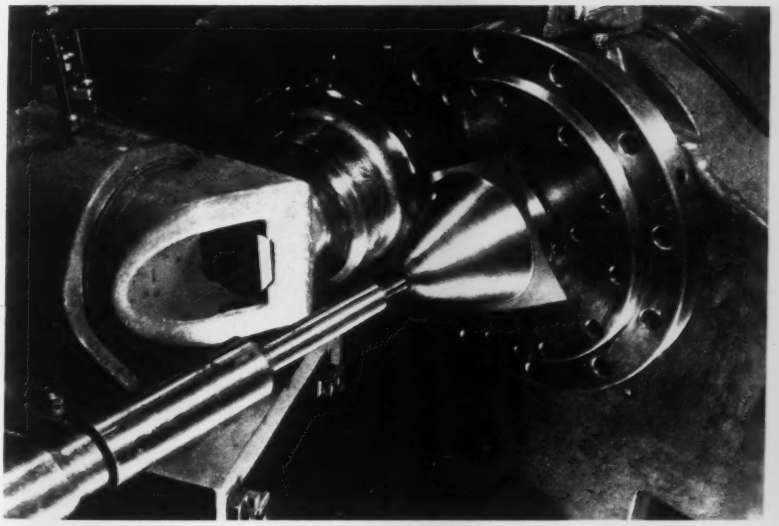
The cone was formed from a blank of Type 430 stainless steel, 0.093 in. thick, by Floturning. The technique compresses the grain structure and yields unbroken flow lines.

The Process—Floturning is a cold rolling process in which metal is displaced parallel to the center line of the part while it revolves. Backed up by a mandrel, the metal is moved by a roller that can be hydraulically or mechanically actuated.

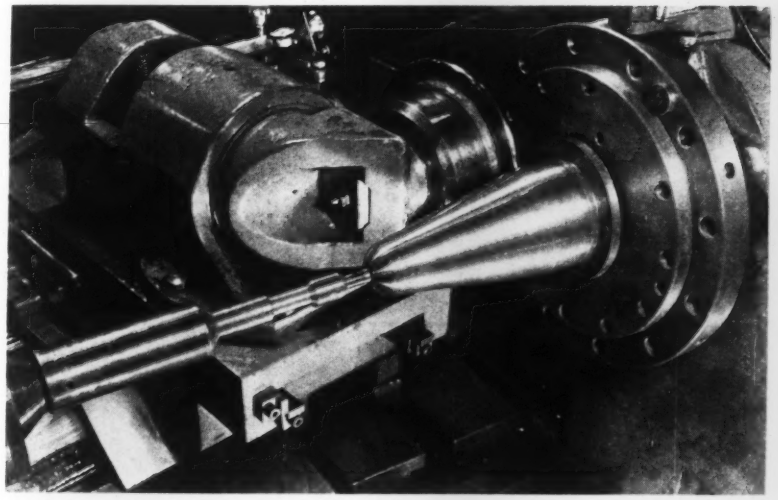
Three steps were required to form the cone: 1. The stainless blank was dimpled in the center to locate it on the mandrel. Metal was then flowed on a 25-degree mandrel. 2. After trimming the base, the cone was annealed to relieve stresses. 3. The cone was formed to its final shape and the second trimming was done on the base.

The Cone—The formed cone is 12 in. long and 6 in. wide at the base. Wall thickness ranges from 0.013 to 0.017 in. The blunt nose is 0.094 in. thick. Weight of the finished shape is only 13 oz.

The Floturning was done by Lodge & Shipley Co., Cincinnati. The firm made 30 such cones for the Redstone Arsenal, Huntsville, Ala.

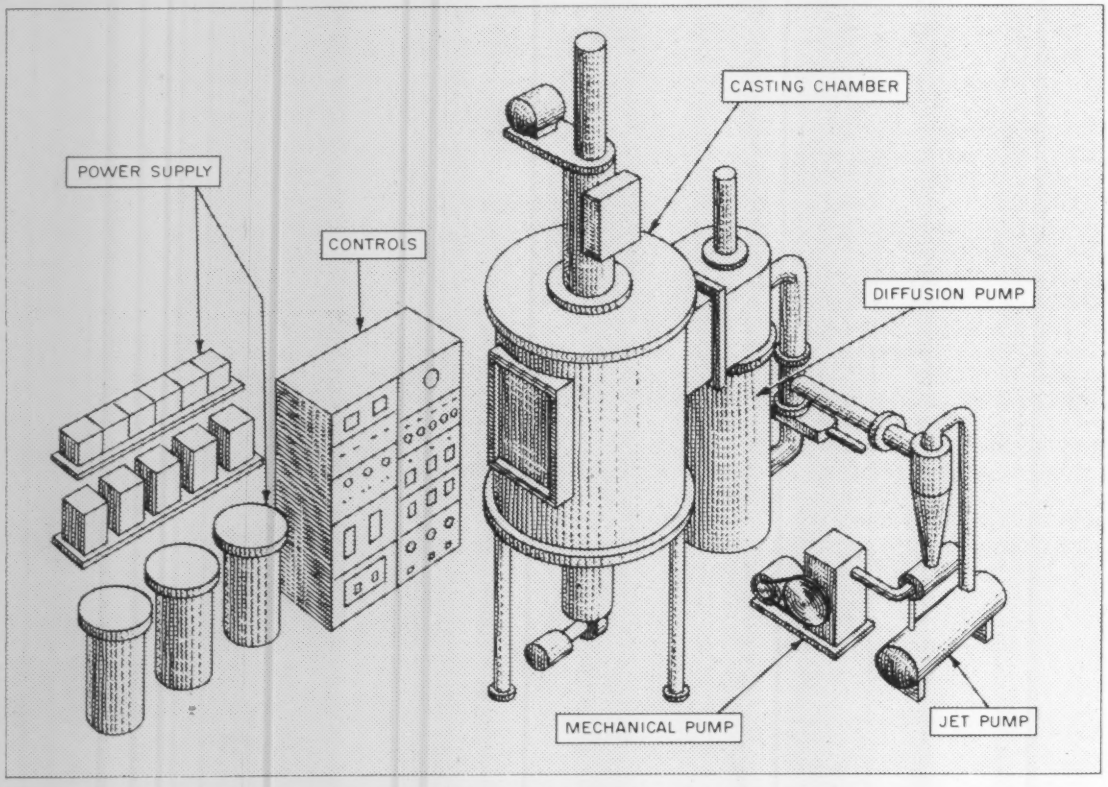


Nose cone takes shape. Hydraulically powered ram flows the stainless steel blank onto a 25-degree mandrel in the first cold forming operation. The base is trimmed and the cone annealed by heat treatment to relieve stresses before the next forming operation



Nose cone nears completion. The second Floturning operation forms the cone to its final shape. The last operation involves trimming the base and drilling holes to attach the cone to the instrument package. The cold forming process smooths the metal; for most stainless steels, the surface finish is usually 4 to 5 microinches

Cone is tested ultrasonically. A technician uses an ultrasonic probe to check the thickness of the wall. The streak of light on the instrument panel indicates thickness. The cone has a high strength-weight ratio



Installation of electron beam melting furnace and auxiliaries at Temescal Metallurgical Corp.

Electron Beam Purifies Alloys

The melting process may lower cost of special metals and stimulate use. There is no apparent limitation on the size of bar or ingot that can be processed

A BARRAGE of electrons is being used to melt and cast refractory and high melting point metals, such as titanium, zirconium, tantalum, molybdenum, and columbium. The vacuum process is at the semiworks stage.

Significance — Electron beam melting was developed co-operatively by Stauffer Chemical Co., New York, Mallory - Sharon Metals Corp., Niles, Ohio, and Temescal Metallurgical Corp., Richmond, Calif. Here are the immediate possibilities of the technique:

1. It should stimulate use of special metals because it will make commercial quantities of high purity materials available at lower costs.

2. In many cases, it will permit the recycling of scrap. The relatively high cost of many of the materials makes this an important factor.

High purity materials are produced by volatilizing and removing certain critical impurities.

Example of what the process can do: Columbium foil, ½ mil thick, has been cold rolled from a 3-in. ingot without annealing. Ductile columbium previously could be made only by solid state sintering.

Operation—Heat for melting is supplied by an electron gun which serves as the cathode and bombards the melt stock (the anode) with electrons. Molten metal drops into a water-cooled copper crucible below, in which the heat required to maintain a molten pool also is provided by electron bombardment. The molten pool surface is kept at

a constant level as the solidified ingot is withdrawn downward.

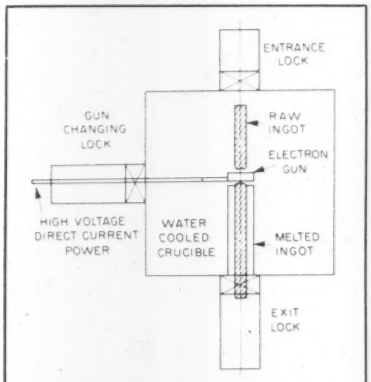
The process should offer several important advantages. Operations can be started and stopped at any time, and the material being melted can be in any form—ingot, powder, flake, or sponge.

Vacuum Magnitude—High vacuums are required—in the range of 0.01 to 0.1 microns. Carbon, hydrogen, and oxygen generally are removed rapidly as carbon monoxide, metal oxides, or similar compounds. As a rule, impurities which form compounds having a vapor pressure of at least 10^{-5} atmosphere at the surface of the melt can be removed easily.

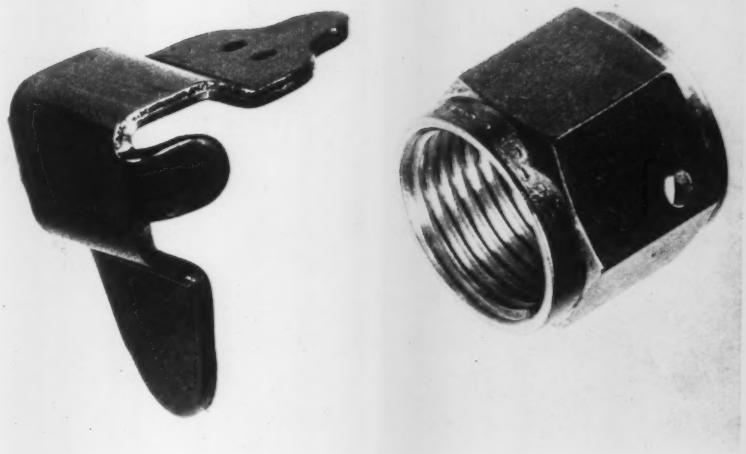
The process also can be used for zone refining. There is no apparent limitation on the diameter of the bar or ingot that can be processed. Castings up to 6 in. in diameter have been made.

Economics—Operating costs look favorable at this stage, says Stauffer Chemical Co., because high voltage direct current electrons are relatively cheap, and power efficiencies are high. The purification of columbium requires 3 to 4 kw-hr a pound. The power requirement for tantalum is 6 to 8 kw-hr a pound.

The owners plan to license the process to industrial and research concerns. As a part of the licensing program, the companies will fabricate and supply furnaces and accessory equipment, make available their accumulated backlog of process experience, and train licensees to operate the process.



Raw ingot is melted by electron beam and recast in water-cooled crucible



These two parts are samples of barrel finishing done in Vibraslide equipment. Threads, the tiny hole in the nut, and small radiuses are clean and free of burrs

Vibration Aids Tumbling

This system of barrel finishing increases capacity, reduces production time, and handles more complex parts than other methods. Another claim: Fixturing is not needed

SMALL parts with inside diameters, hard-to-reach corners, and tiny radiuses are naturals for a new barrel finishing system called Vibraslide.

It uses a machine which combines regular barrel rotation with vibration (2300 cycles per minute). The distributor, Minnesota Mining & Mfg. Co., St. Paul, lists these advantages: 1. It reduces finishing time as much as 70 per cent. 2. One machine does the work of three standard machines.

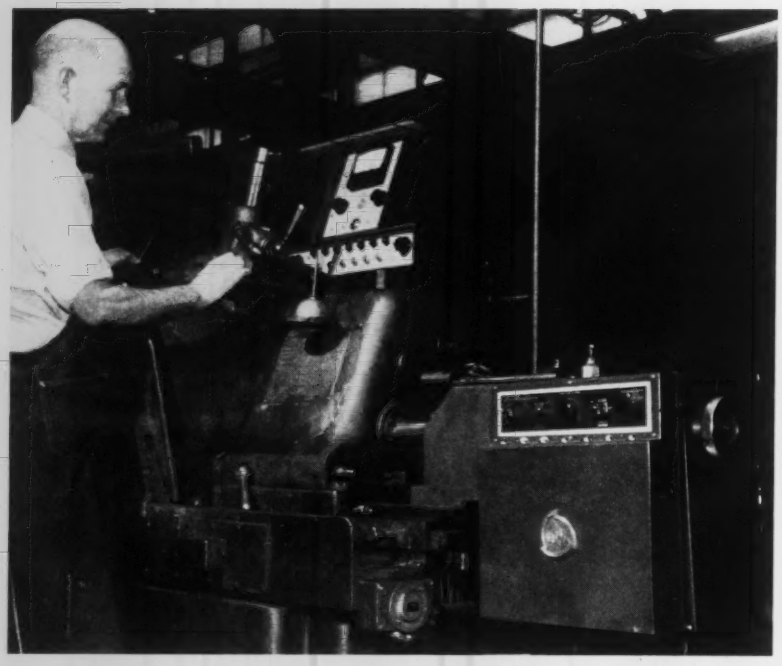
Some Examples — Metal Finish Inc., Newark, N. J., finished truss rings in 2 hours. Standard barrels took 40 hours to do the same job. The firm finishes jet engine blades in 16 hours, a job that took 40 hours with regular barrels.

A manufacturer of business machines used to hand finish a magnet armature. The vibratory system handles 2000 parts in 1½ hours.

Description—The Vibraslide looks like a standard octagonal barrel with a larger frame which holds the vibrating equipment. The driving mechanism can be removed without dismantling the machine. Rubber mountings keep the vibration where it belongs.

Theory—The speed of the system comes from opposing motions of the cutting slurry. The vibrating cycle is opposite to that of the barrel, a combination which increases the cutting action of abrasive materials like shaped aluminum oxide.

Rapid stock removal, even at 4 rpm, makes it possible to process delicate or large parts which ordinarily require fixturing to prevent breakage.



The attachments at right and on top of the machine move the regulating wheel on this centerless grinder to adjust for size. Gages check every workpiece—tell the control when and how to correct

Control to 50 Millionths

A magnetic field shrinks and swells a steel bar to produce minute increments of feed on centerless grinders. Result: The rejection of workpieces is virtually eliminated

DRASTIC improvements in size control without any sacrifice in the speed at which parts are ground, and an absence of rejects that has boosted output of usable parts: Those advantages of a control and feed system on centerless grinders (called Inchworm) are cited by John S. Miller, plant superintendent, Torrington Co., Torrington, Conn.

The Problem — The parts are needle bearings. Each one is carried on a work rest. Adjustments are made by moving a regulating wheel toward or away from the grinding wheel. The conventional way of doing this presents a problem:

The machine operator rotates a handwheel which is on the end of a lead screw. The force needed to start the regulating wheel is greater than that required to continue its movement; the wheel doesn't move the instant the operator begins to turn the handwheel, and the lead screw may wind up (like a spring) until enough force is accumulated to overcome the static friction of the wheel slide. When the slide does move, it can lurch and overcorrect. Result: The adjustment is too inaccurate to control part size within tolerances.

The Solution — Here's how the Inchworm works: As each part is ground, its size is automatically measured to within a few millionths of an inch. The measurement is automatically compared with the specified size.

If adjustment is needed, the information is transmitted to a memory unit that decides whether the wheel slide should be moved, in which direction, and how much. Part size is held within 50 millionths.

No correction is made if only one part is off, but if successive parts are the wrong size, the unit makes the necessary correction. The gages detect size variations to an accuracy of 10 millionths of an inch.

How It Moves — Developed by Airborne Instruments Laboratory, Mineola, N. Y., the device uses "magnetostriction" to get precise movement of heavy loads.

Under the influence of a magnetic field, magnetostrictive material lengthens or shortens, returning to its original size when the magnetic field is removed.

Magnetostriction is combined with a pair of hydromechanical clamps. Motion is produced by shrinking the magnetostrictive armature while the clamp at one end is locked, and the one at the other end unlocked. This allows one end of the armature to move. The opposite clamp is then locked while the first one is unlocked, and the armature is expanded by removing the magnetic field. The result is a net motion of the armature. The motion may be either forward or backward, depending upon the order in which the clamps are locked and unlocked, together with the timing of the current through the magnetic coil.

(Comparison: In nature, the inchworm moves by gripping with its forefeet, hunching its body forward, then gripping with its hind feet.)

The base of the device's motor is bolted to the bed of the grinder, and the magnetostrictive armature is attached to the wheel slide. Movement of the armature through the clamps moves the wheel slide backward or forward. The minute movements can be as small as 5 millionths of an inch, or as large as 100 millionths.

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SAW AND STEEL CO.
FITCHBURG, MASS.

Communications—Wired and radio systems of several types keep operators of company trucks, locomotives, river craft, and cranes in constant touch with control points

Organized for Electronics

Developments came so thick and fast in communications, processing, inspection, and control that Weirton gave a separate department the job of keeping up

ONLY A few years ago electronic equipment was of minor interest to the electrical department in a steel mill.

Weirton Steel Co. foresaw the increase in emphasis, and in 1955 established a separate electronics department. It has been hustling to keep ahead of new electronic equipment ever since. Here is a rundown of the company's installations:

1. *Audio Amplifier Systems*—They are used on all raw material handling operations, rolling mills, and processing lines.

2. *Radio Communications*—The interplant railroad system (operating on 152.87 megacycles) has two-way radio on all engines and is dispatched from the central yard office. The interplant trucking system (operating on 152.99 megacycles) has two-way radio on all trucks and is dispatched from the truck dispatcher office.

A third frequency (154.57 megacycles) is used by the Electrical Dept. in dispatching the line truck and line crews that maintain and repair the electrical distribution system. Two-way radio is used on the river boat at the Weirton docks on the Ohio River to communicate with other river boats and U. S. government dams to speed the handling of barges.

3. *Carrier Radio Communication*—This type is used on moving cranes throughout the plant. Crane operators can talk to each other and with the man on the floor. The electronic device generates a signal that is fed into the crane's hot rails; the signal may be picked up by another crane on the same source of power. Where telephone lines are not feasible, this system can also be used in offices, utilizing power lines.

4. *Radio Reflow Induction Heating*—High power radio induction heating is used at No. 2, 3, 4, and 5 electrolytic tinning lines to reflow the matte-finished tin plate to a mirror finish. It generates 7.2 million watts of radio power.

5. *Electronic Scales*—They are used to weigh steel. Load cells are coupled to read-out devices for quick, accurate weighing.

6. *Photocell Amplifiers*—They are used to detect holes in tin plate. A continuous strip processing line must maintain enough slack in the looper pit so that a new coil

Shearing* LINES

Designed and Built by MESTA

Mesta 60" Sheet Shearing Lines with Trimmers and Combination Rotary Flying Shears and Levellers Operating at McLouth Steel Corporation, Gibraltar, Michigan

*HIGH SPEED SHEARING, SIDE TRIMMING AND CUTTING EQUIPMENT FOR SHEET AND [illegible] GAUGE STRIP STEEL

Designers and Builders of Complete Steel Plants

MESTA MACHINE COMPANY

PITTSBURGH, PENNSYLVANIA

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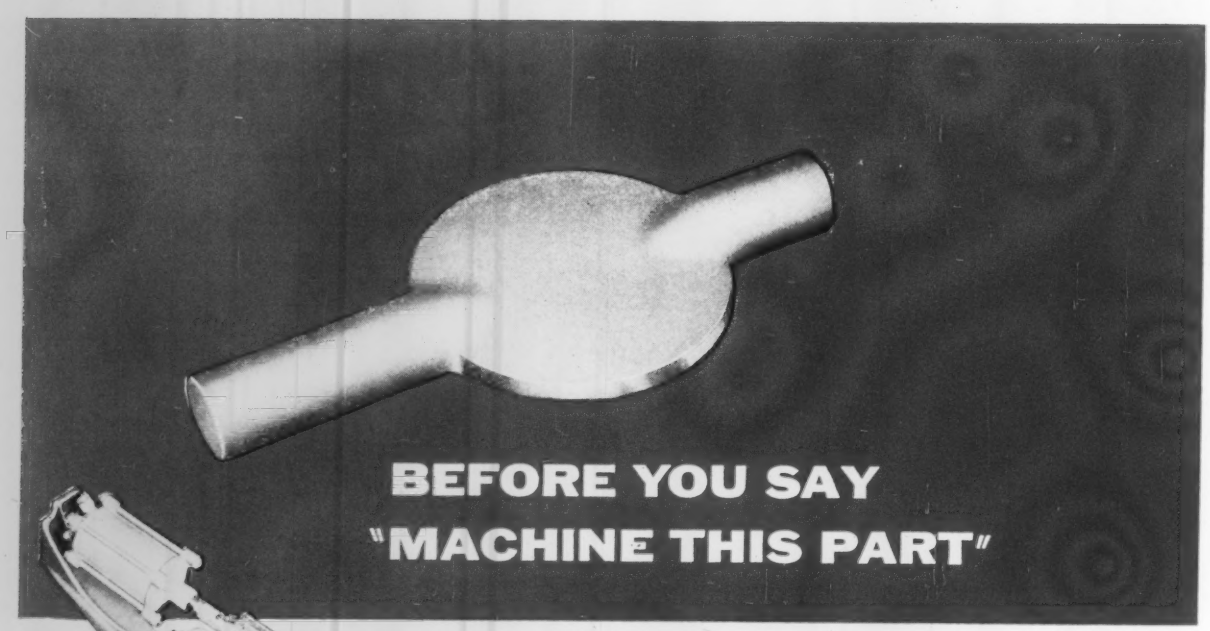


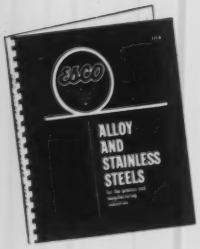
Call an ESCO Casting Engineer

It's often the seemingly simple parts that cause the production "headaches". In this case the "butterfly"—the simple disk and shaft assembly in an exhaust gas actuated power brake. These small parts presented complicated machining and fabricating operations. The elliptical shape of the disk, the compound bevel of the disk edges, the slotting of short length of shafting, welding the shafting in perfect center and alignment on the disk and finally the turning of the shaft ends or bearings. All this fabrication had to be done in a heat-resistant steel to eliminate warpage of the disk, because the blow-by of exhaust gases would result in decreased operational efficiency of the power brake unit.

Oftentimes the answer to such a problem can be as simple as this one was.

. . . "Shellcast this part". And the result . . . a one piece casting combining the elliptical beveled disk with an integral shaft. Cast so smooth and to such close tolerances that the only machining operation to be performed was the bearing ends of the shaft. Heat-resistant *ESCO* Alloy 43H, (A297-55 Grade HH) also eliminated the warpage problem at the same time.

Whether you make butterfly valves, or any one of a million or more complicated components of either low or high alloy steels, before you say "machine this part" call an *ESCO* Casting Engineer.



Write for *ESCO* booklets No. 175 and No. 205.

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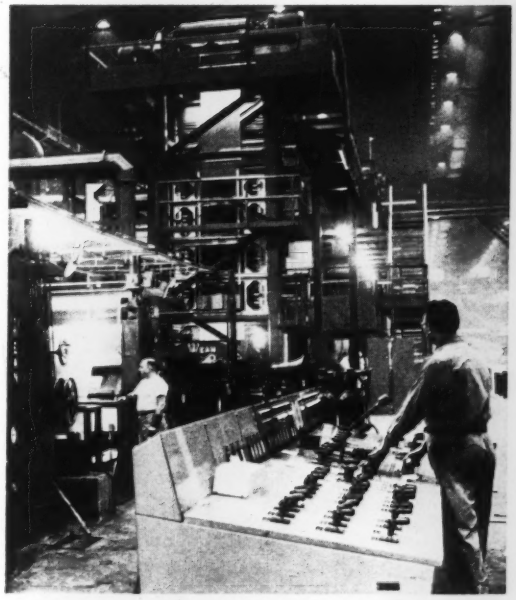
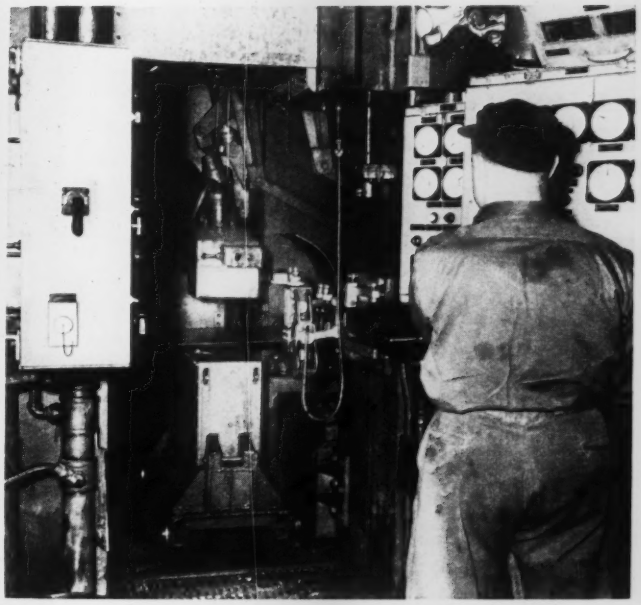
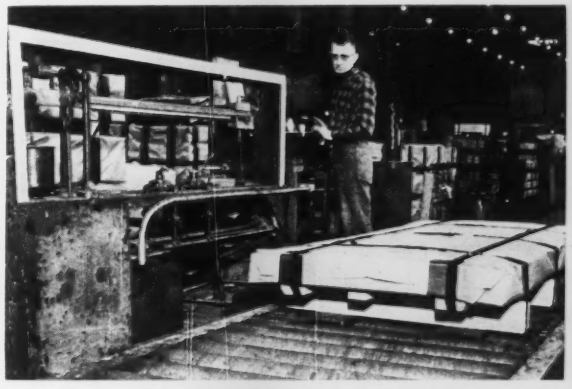




Processing—Induction heating is used to reflow tin plate on the electrolytic tinning lines to produce a bright coating. On the 54 in., hot strip mill, an x-ray thickness gage controls gage tolerance



Inspection—Electronic detectors on tin plate cutting lines spot holes down to 1 mm in diameter and reject defective sheets. Electronic scales weigh all material shipped from the cold mill shipping department

ELECTRONICS . . .

can be welded to the processed strip. Looping is controlled by photoelectric cells. They are also used to automatically count sheets being cut and piled for shipment.

7. *Electronic Gages* — Weirton uses x-ray, beta ray, and contact gages. X-ray gages are used at the 54 in., hot strip mill to measure thickness on the fly. At the No. 7 tandem mill, x-ray devices are used to automatically control the gage of strip. Contact gages are used at the cutting lines, tandem mills, and temper mills to control prime and offgage products. A Baird-Dow direct reading spectrometer is used by the Quality Control Dept. to determine residual elements or special additions needed to produce a specified steel or iron.

8. *Closed Circuit TV*—Television is used to control furnace charging and the runout tables for the 54 in., hot strip mill. It is used at scales in the yard office to ascertain the number of cars weighed and to inspect their contents.

9. *Visual Education*—The education and training department has several tape recorders, movie projectors, and visual training machines.

People—All electronic equipment is serviced and maintained by skilled personnel. The company prefers to get these people from its own ranks. They are required to pass periodic examinations to demonstrate their qualifications for advancement.

In addition to the knowhow the men acquire on the job, they have the opportunity to take courses at the local high school on their own time.

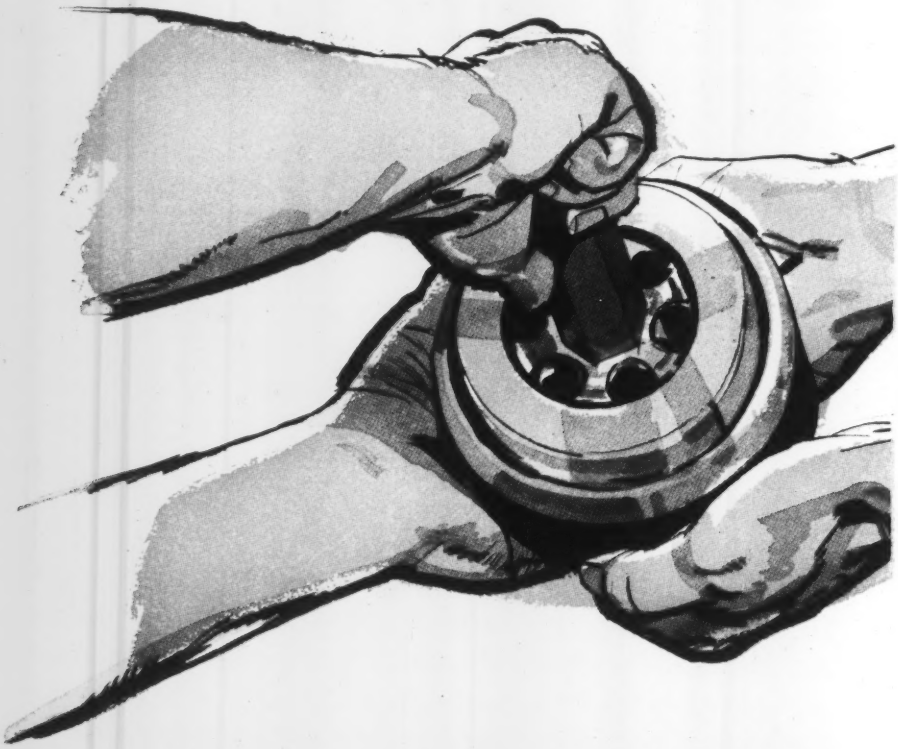
Look what

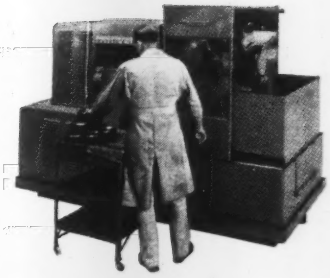
production increases

this company got with

STANICOOL
HD Soluble Oil

PRODUCTION MANUFACTURING COMPANY DOUBLED NUMBER OF THREADS CUT BETWEEN CUTTER SHARPENINGS, SCORED OTHER PRODUCTION GAINS





Situation: O. C. Patterson, vice president of Production Manufacturing Company, Tulsa, wanted to cut down on the number of metalworking products used in the plant. He wanted to use just one oil for cutting SAE 1025 steel, screw stock and SAE 440 stainless steel.

Action taken: Checking with Standard Oil lubrication specialist, R. J. MacMurray, Mr. Patterson learned about STANICOOL HD Soluble Oil. A test was set up on a Warner & Swasey automatic bar machine. Roger MacMurray helped set up equipment for the test and helped work out the right STANICOOL HD and water mixtures for the types of metal used. A 4:1 mix for 1025 steel, and up to 10:1 for other metals and jobs was decided upon.

What happened: Parts were threaded on the bar machine that Production Manufacturing had previously been unable to thread. On a new Warner & Swasey AC chucker, it was found STANICOOL made possible threading at a speed of 35 surface feet per minute. With STANICOOL HD 150 threads could be cut before the cutter needs to be sharpened. Only 75 threads could be cut before. Plant management found STANICOOL also protected work from rust while it went through many additional shop operations.

To find out more: All the facts about STANICOOL HD Soluble Oil are yours. Just call your nearby Standard Oil lubrication specialist in any of the 15 Midwest and Rocky Mountain states. Or write **Standard Oil Company (Indiana), 910 S. Michigan Ave., Chicago 80, Illinois.**

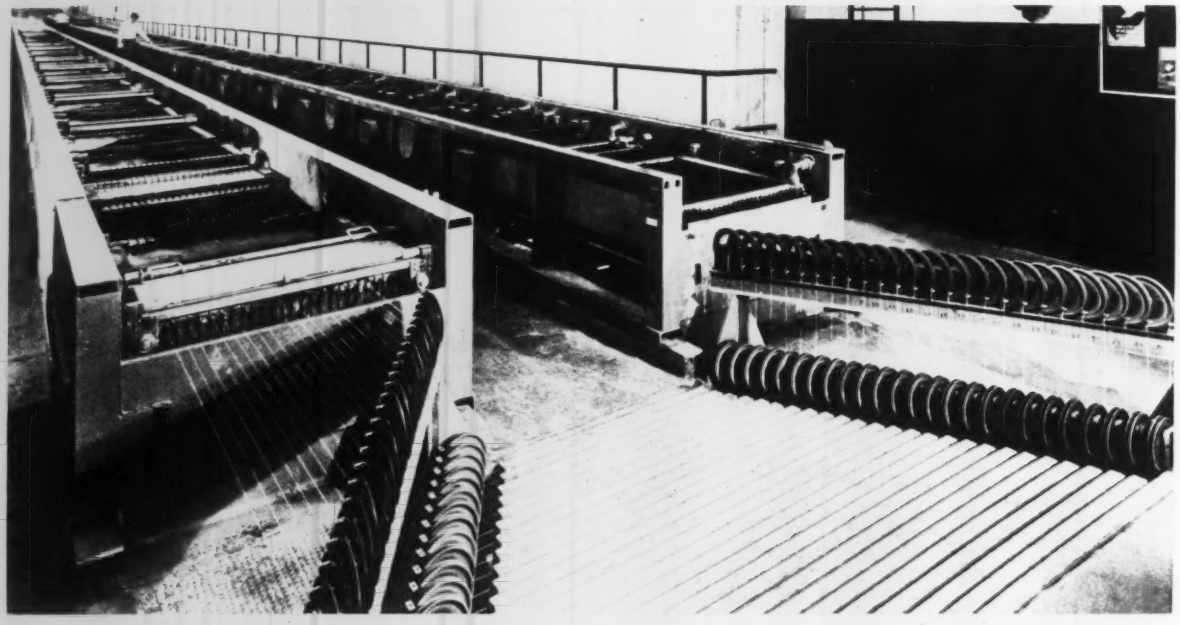
No trouble. Pressure coupling is checked by O. C. Patterson, vice president of Production Manufacturing, Standard Oil's Roger MacMurray and foreman Byron Finley. Roger MacMurray helped the men in this plant find a new route to production increases with STANICOOL HD Soluble Oil. That's his job, and he's well equipped for it. Eight years' experience in such work, an engineering degree from the University of Colorado and completion of the Standard Oil Sales Engineering School are his qualifications.

Quick facts about

STANICOOL HD Soluble Oil

- Has E. P. and oiliness properties comparable to cutting oil.
- Contains germicide that controls bacteria build-up.
- Is nonirritating to skin.
- Protects machines, tools and work against rust and gumming.
- Will not gel in cold weather, has excellent emulsion stability.

You expect more from STANDARD and get it!



One of the two 600-ft long plating machines at Western Electric Co. Twenty-five strands of wire are cleaned and partially plated in the tanks on the left. They then reverse direction and travel back through the tanks at right for final copper plating

Conductor Wire Plated Continuously

Thickness of copper coating on steel core is controlled precisely by instruments which measure resistance of the plated wire and regulate rectifier power output

TWO 600-ft long machines at the Point Breeze Works of Western Electric Co., Baltimore, are a boon to wire platers. They turn out 2 billion ft of copper-clad telephone wire annually.

The wire receives 32 separate treatments in nine different chemical solutions. Six are so corrosive they must be handled by stainless steel pumps.

The Product—The copper-clad conductor is used for drop wire, the familiar service connection between the telephone pole and your home. It has a steel core 0.033 in. in diameter with 0.0025 in. coating of copper.

The steel core is a hard drawn wire with 0.65 to 0.75 per cent carbon and a breaking strength of 250,000 to 290,000 psi. It gives the drop wire strength to withstand the distributed loads of ice and wind and shock loads caused by falling tree limbs and other debris during storms.

Plating Operation—First step in building the conductor is the cleaning of oil, dirt, and wire drawing compounds in a heated alkali solution. Next, a sulfuric acid pickling bath, operated at room temperature, removes traces of rust and scale and gives the wire a light etch. The etch promotes bonding of the copper plate.

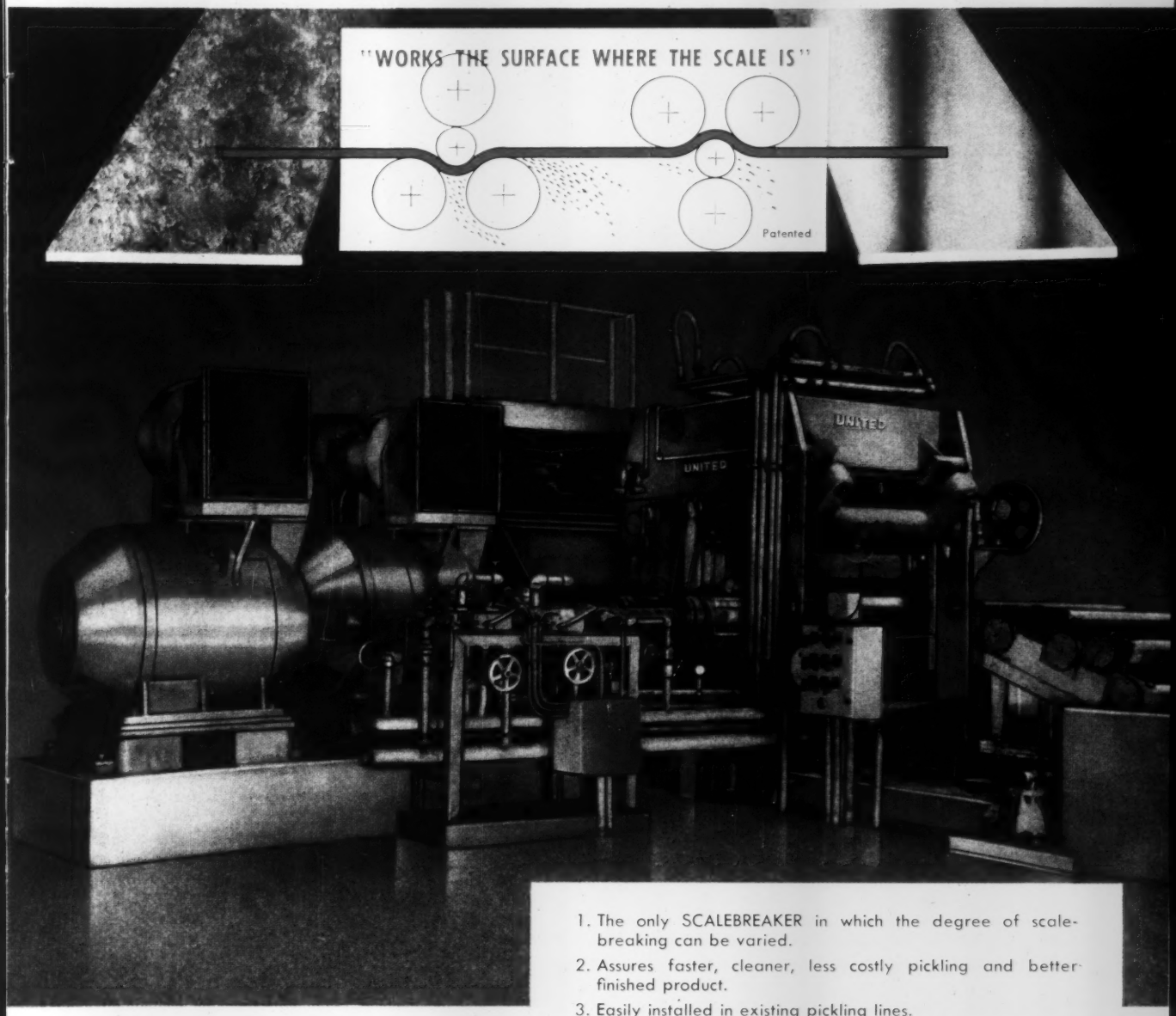
A flash coat of copper is necessary before buildup of a heavy plate. The copper strike is made in a combination of two copper cyanide baths, which produce a deposit slightly more than 0.0001 in. thick. Precise adjustments of current densities and chemical compositions produce a fine grain structure in the flash coat, which gives the subsequent copper plate a fine crystalline structure.

Copper Plate—The final coating of copper is deposited in an acid solution composed of about 5 oz/gal of fluoboric acid and 20 oz/gal of copper fluoborate. Copper can be deposited several times faster in the acid bath than in the alkaline cyanide bath—current densities of 2000 amperes per square feet are feasible.

Annealing—Next step is an annealing operation to transform the columnar structure to a fine, random grain structure. The wire is

UNITED®

NEW *Strip Processing* SCALEBREAKER



1. The only SCALEBREAKER in which the degree of scale-breaking can be varied.
2. Assures faster, cleaner, less costly pickling and better finished product.
3. Easily installed in existing pickling lines.

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Designers and Builders of Ferrous and Nonferrous Rolling Mills, Mill Rolls, Auxiliary Mill and Processing Equipment, Presses and other heavy machinery. Manufacturers of Iron, Nodular Iron and Steel Castings and Weldments.

Tubexperience in action

Special mill services through your Superior Tube distributor

* You may be faced with the need for tubing services that only highly competent specialists at the mill can provide. You may need small tubing in hard-to-get analyses. Or of special shapes, held to very close tolerances. Or with a closely controlled range of properties. Perhaps it must also undergo rigid inspections and tests not normally available from tubing suppliers.

Requirements like these call for a tubing specialist.

CONTACT A SUPERIOR TUBE DISTRIBUTOR

His broad experience can help you solve many problems. But most important of all—he can acquaint you in detail with many special services offered by the mill. These include statistical quality control, nondestructive tubing inspection and testing, pilot and test lot sampling and melting, field specialist and specification services—there are many more.

EQUIPPED TO SERVE YOU

You will find that your Superior distributor has a modern steel service center equipped to meet all your requirements in tubing. He offers you:

- Small tubing in many analyses
- Wide range of sizes
- Tubing of highest quality for any applications
- Diversified stock
- Prompt price quotations and delivery
- Use of his warehouse for your firm's tubing inventory

For more information about Superior tubing, write for a free copy of Bulletin 40, "A Guide to the Selection and Application of Superior Tubing." Superior Tube Company, 2005 Germantown Ave., Norristown, Pa.

Superior Tube

The big name in small tubing

NORRISTOWN, PA.

heated by a flow of alternating current. As it leaves the annealer, it is quenched in cold water.

Although the annealer has a steam atmosphere to prevent oxidation of the copper, some oxide forms and must be removed in a bath of fluosilicic acid.

Lead, Brass Plate—After copper plating, the conductor receives a thin coating of lead (from a lead fluosilicate solution) which is then covered by a thin plate of brass (from a copper-zinc cyanide bath). Rubber insulation is extruded over the plated wire in a separate building.

The sulfur in the rubber and the copper in the brass react to provide good adhesion between the conductor and the insulation. The thin layer of lead prevents the chemical action from penetrating into the copper plate. The lead and brass deposits are only a few millionths of an inch thick.

Over-All Operation—The production of telephone drop wire is divided between two building levels. Cleaning and electroplating are done on the upper level. The lower level contains steel wire payoff and wind-up, material handling, solution mixing, storage, filtration, pumping, and heating.

Several of the solutions used in plating are extremely corrosive. The copper fluoborate solution, for example, has a pH of less than 1, and is used at 120 to 135° F. To handle the corrosives, extensive use is made of cast stainless steel pumps. Type CN-7M and CF-8M (Alloy Casting Institute designations) cast stainless alloys are used for all pump parts in contact with the solutions.

Close Control—Fifty continuous wire strands are coated simultaneously in the two machines. Wires are kept separated at fixed distances, propelled, and energized by passing over and under 104 grooved metal rollers. An electronically controlled drive system maintains a uniform tension on the wires at a speed of 100 fpm.

The plant is carefully planned for automatic production. It is fully manned for round-the-clock operation of both machines by six men per shift. A material handler is on one 8-hour shift.

Yes, that's a strong promise. But it's being done right now in plants like yours. Here's how:

Match the requirement of your job with a custom-built Reading crane at no extra cost

Imagine, at what you'd normally pay for an "ordinary" crane, you can actually have one "tailor-made" for your own plant. For when you order a READING CRANE, our engineers offer you a choice of several interchangeable motor, trolley and hoisting units.

Known as UNIT CRANE DESIGN, this unique construction method assures greater operating efficiency. It enables you to move more materials at the lowest possible cost. And it helps you reduce maintenance time and save maintenance dollars—any unit can be removed for overhauling or repair without dismantling any other unit!

READING CRANE & HOIST CORPORATION 2102 Adams St., Reading, Pa.

READING CRANES

CHAIN HOISTS | OVERHEAD TRAVELING CRANES | ELECTRIC HOISTS

First Stainless Steel Auto

STILL BRIGHT AFTER

More than a quarter-century ago, pioneer automaker Henry Ford recognized the advantages of stainless steel for automotive trim. And here's evidence of his sound judgment. After 27 years, the stainless trim on this 1930 Model A is bright and rust-free. More than 6 different parts on this model are stainless—radiator trim, head lamps, tail lamps, cowl strip, hub caps, gas tank cap, and other bright work.

ARMCO STEEL

ARMCO STEEL CORPORATION • 1728 CURTIS STREET, MIDDLETOWN, OHIO

SHEFFIELD DIVISION • ARMCO DRAINAGE & METAL PRODUCTS, INC. • THE ARMCO INTERNATIONAL CORPORATION

Trim Ever Used
27 YEARS

A few pounds of trim on this 1930 Model A Ford represent the first automotive use of stainless steel. Today it's still bright and shiny. It's free of corrosion too—a convincing demonstration of the reason why automakers in 1957 used more than *110,000 tons of stainless steels!*

Customers see for themselves that stainless steels stay bright and beautiful—that stainless fights rust, chemical corrosion, heat, stress, and wear. Little wonder that parts made of Armco Stainless Steels do such a powerful selling job in so many products.

They offer *proved* sales appeal, not only in attractive consumer products, but in industrial and commercial equipment that works hard and long. Here the superior strength, endurance, and low maintenance of Armco Stainless really pay off in low cost per year of service.

Armco Stainless Steels are available in sheet, strip, plate, billets, bar, and wire; in many grades, standard and special; in a multitude of conditions, gages, sizes, forms, and finishes. Why not get the full story about high-quality Armco Stainless Steels? Just fill in and mail the coupon, or call your nearby Armco Sales Office or Armco Stainless Distributor.

Other Armco Steels for top-quality products include ALUMINIZED STEEL, ZINCGRIP®, ZINCGRIP PAINTGRIP®, Cold-Rolled PAINTGRIP, Enameling Iron, Welded Steel Tubing, Electrical Steels, High Strength Steels, Long Ternes, and high-quality Hot- and Cold-Rolled Steels.

Armco Steel Corporation
1728 Curtis Street, Middletown, Ohio

Send complete information about:

Armco Stainless Steels

We make _____

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TITLE _____

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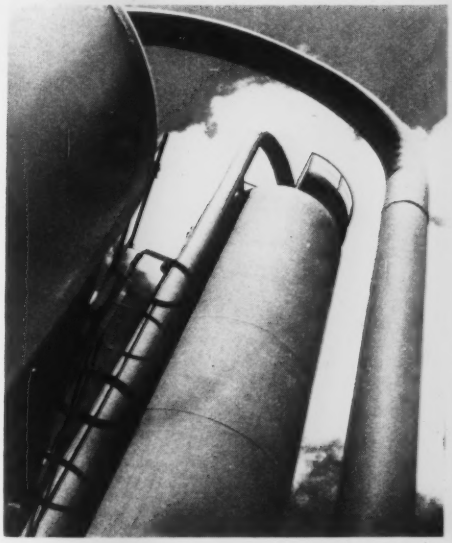
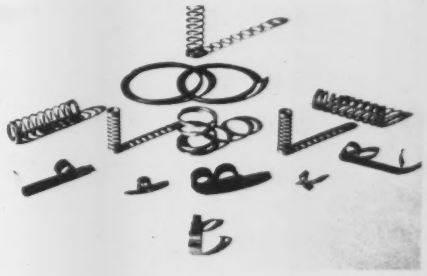


Chemical processors make wide use of Armco Stainless Steels to resist corrosive chemicals and to guard product purity.



Special Armco Stainless Steels help solve many performance and fabrication problems. These springs, for example, are made from Armco 17-7 PH. This unique precipitation hardening stainless steel offers superior spring properties combined with ease of fabrication.

The manufacturer of these bright bus stanchion fittings uses Armco 17 Ti (Type 430 Ti) Stainless. For many applications, this chromium grade offers substantial savings over chromium-nickel types.

See for yourself how Black & Decker Silver Brazes Fan Assemblies: HANDY & HARMAN will show you how

at the Design Engineering Show—Chicago—April 14-17
and at the Tool Show—Philadelphia—May 1-8

Right now, we can only tell you — in text and pictures — how this power tool company brazes this assembly on a simple brazing machine.

The assembly, consisting of a steel hub and a blade, is used in Black & Decker portable drills as a cooling fan. Its basic simplicity easily lends itself to the continuous heating method devised by Black & Decker. A vital requirement is great joint strength; this is an inherent quality of silver brazing.

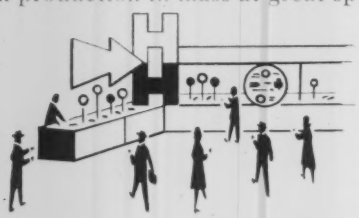
The fan, hub and EASY-FLO 35 and HANDY FLUX are the production essentials. One operator assembles and fluxes the parts and places them on a conveyor which carries the assemblies under a bank of burners. One assembly is brazed every few seconds.

This is an excellent example of how silver alloy brazing, coupled with production inventiveness, can accomplish production in mass at great speed. It is very possible that your metal-joining problems can be solved just as swiftly and simply.

If you plan to be at either of the shows mentioned above, you will see this operation in full swing. Handy & Harman will demonstrate this application, with some advanced heating procedures. We invite you to look in on the "simple speed" of silver brazing.

Meanwhile, we welcome any questions or problems on the joining of metals. We have found that, very often, a simple question on a metal-joining problem leads to multi-benefit answers through silver alloy brazing.

FIRST, BULLETIN 20 — This informative booklet will get you off to a good start on the values, techniques and economies of low-temperature silver brazing. A copy awaits your request.



Your NO. 1 Source of Supply and Authority on Brazing Alloys

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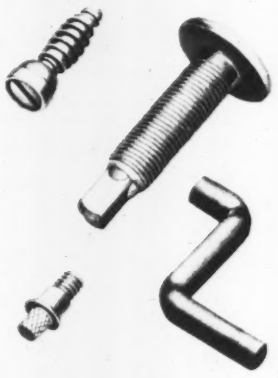
Cold Heading Better

PRODUCTION costs of components up to 6 in. long can be cut by using cold heading techniques. The part is stronger than its fabricating metal because the process flows and compresses steel grains instead of cutting them. Other benefits include elimination of extra operations, use of fewer parts, faster manufacturing, and less scrap.



Cold headed, threaded, and knurled examples of a process that includes many benefits in addition to strength and speed

Examples—The parts illustrated are manufactured by Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y. The clamp adjusting screw (top, left) formerly required parts made by two different processes. The flange was added during assembly. Now a cold heading machine rolls the thread and forms the head with the flange as an integral part.

The leveling screw (top, right) is cold headed at the same high speed used to make standard bolts. It is less expensive and stronger than the original two-part assembly.

An insert screw (bottom, left) was cold formed at a 40 per cent reduction in cost—threading and knurling are low-cost adjuncts to cold heading. Both operations were done on one machine.

The lever (lower, right) was bent with two right angles from a continuous length of rod in one operation. It formerly required a two-stage process.

Small Lot Automation Is Here

"AUTOMATION is economically possible for small lot production jobs involving complex shapes and close tolerances," claims L. T. Rader, general manager of General Electric Co.'s Specialty Control Dept., Waynesboro, Pa.

Speaking at Morey Machine Co., New York, when Morey introduced its new numerically controlled profile and contour milling machine, he cited these examples:

- A fabricator reports that a numerically controlled machine reduced template costs on wing spars from $25 to $30 a foot to $4 a foot.
- An airframe manufacturer states that his minimum savings are 50 per cent over a wide variety of parts.
- Another fabricator states that numerical control gave him a 61 per cent saving on one lot of 85 parts and a 69 per cent saving on two lots of 164 parts.

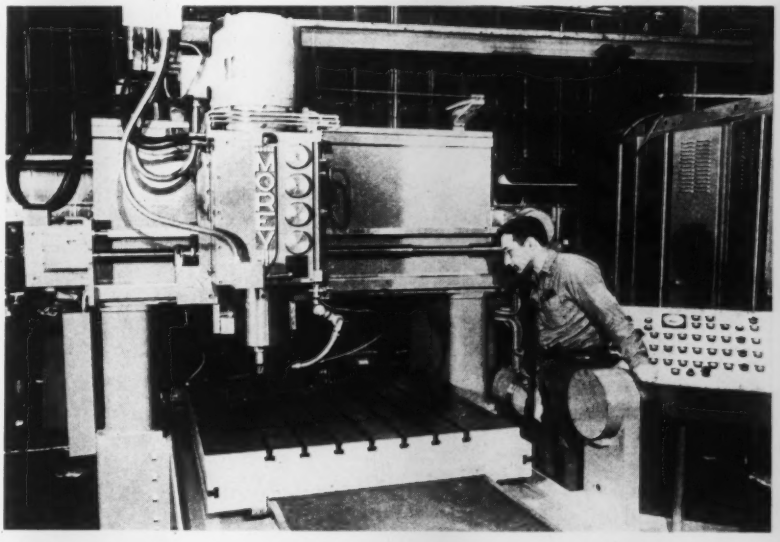
With numerical control, you can produce most complicated parts with minimum setup, in small lots, without skilled labor, and assure accuracy and repetition. Mr. Rader believes it may provide the critical need for more automation, particularly in defense production.

Why Automate?—He explains: "We have some catching up to do in certain areas. We will never again have the traditional leadtime to build up defense.

"Should a new global war be provoked, the critical early engagements will have to be fought and won with the weapons on hand. Saving time is now a more important problem to management than ever before."

Milling Machine — Morey's new milling machine was developed to machine precision aircraft parts from ferrous and nonferrous metals. The magnetic tape control system automatically directs vertical, horizontal, and longitudinal milling up to 100 in. a minute, at tolerances as low as 0.001 in. Similar tolerances are possible at traverse of 200 ipm.

"We expect to market these machines at well under $100,000," declares Leonard Morey, president of the company.

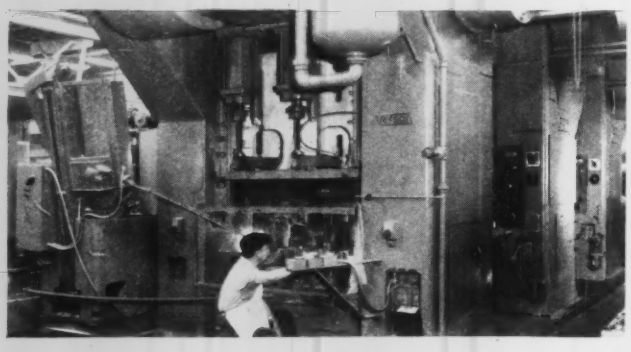


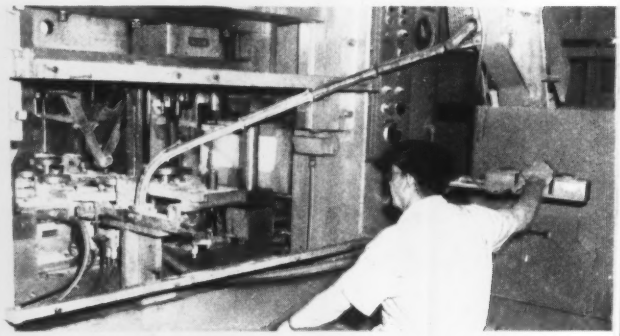
Machine operator positions table by handwheel before starting tape controlled operation of the Morey Model A50 profile and contour milling machine

Verson

COLD

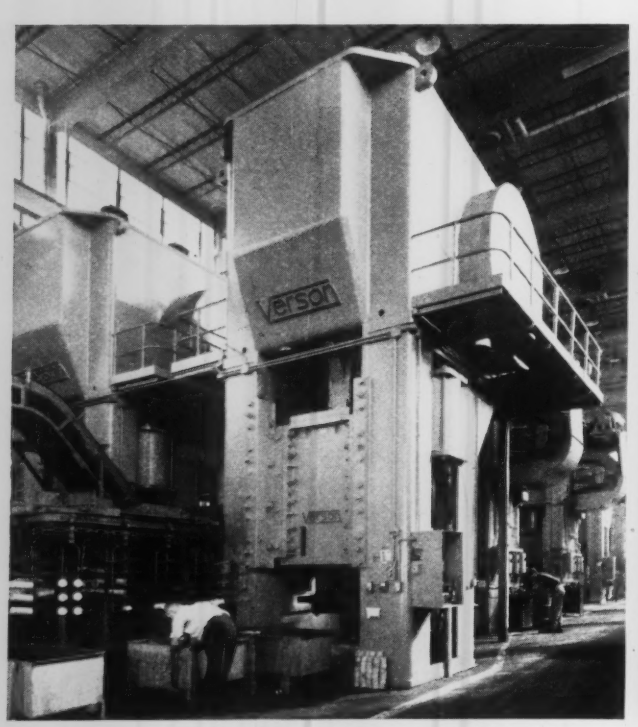
THESE VERSON EXTRUSION PRESSES ARE PROVING DAILY THE ECONOMICAL ADVANTAGES OF THE COLD EXTRUSION PROCESS



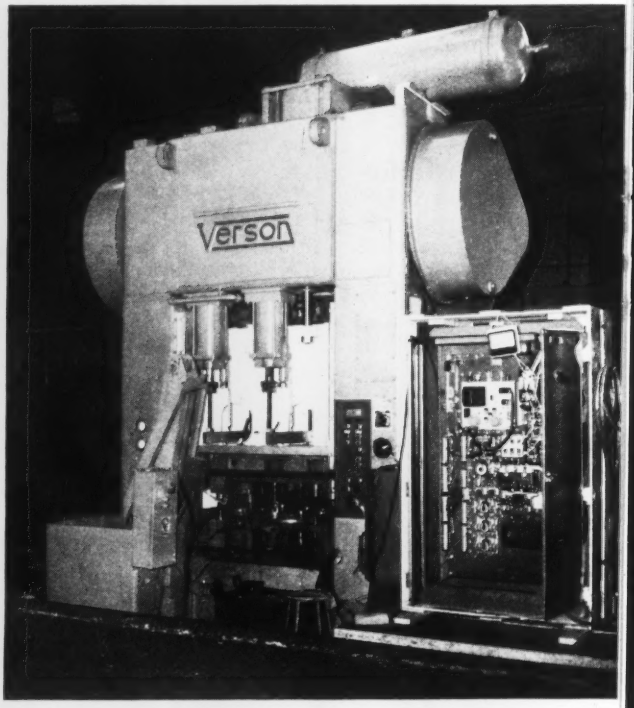


Above is a line of three identical 400 ton Verson extrusion presses producing the automotive valve tappet shown on the facing page. A close-up of the die space is shown at the right. All three presses are complete with cushion equipment, automatic feeds and dial type tooling. Each press operates at 30 SPM and produces two parts per stroke.

A pioneer installation of two Verson extrusion presses rated at 1500 and 4500 tons respectively.



Successful operation on Verson extrusion presses in your plant is assured by tryout on production runs before shipment.



EXTRUSION...

it may be your best opportunity for improving your profit spread

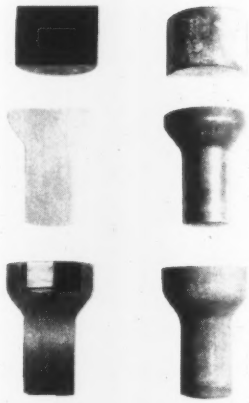
In the intensive search for ways to hold materials and manufacturing costs down, cold extrusion has emerged as a major weapon. Scores of piece parts that formerly had to be machined from bar stock or hot forged, can now be extruded at a fraction of their previous cost. Scrap loss and the amount of machining necessary has been slashed.

This is no longer a theoretical concept. Verson cold extrusion lines have been in production for as long as three years. Since 1955 Verson has conducted a comprehensive Cold Extrusion Research and Development Center in its Chicago plant for the purpose of developing and proving tooling and lubrication techniques.

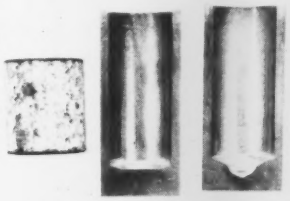
Out of this experience has come the cold extrusion know-how necessary to evaluate the adaptability of the process to your production requirements. With the ever-tightening squeeze on your profit margin, you can't afford *not* to investigate the cost-cutting possibilities of Verson Cold Extrusion. Get in touch with Verson, today. For recommendations, send an outline of your needs.

A special report on Tooling for Cold Extrusion will give you a better insight into what can be done with cold extrusion. Write for your copy; there's no obligation.

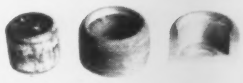
VERSON COLD EXTRUSION CAN REDUCE MATERIAL COSTS, CUT MACHINING COSTS ON JOBS LIKE THESE



Shown here in both exterior and cross section views is a propeller shaft end for an automotive drive shaft. It is made from AISI 1037 steel in two operations in 600 ton Verson extrusion presses. The part is 3 3/16" in finished length and is produced at a rate of approximately 1200 per hour.



This is the automotive tappet produced in the presses shown at the upper left on the facing page. Shown are the slug and cross sections after first and second operations. After heat treating, finish grinding and drilling of an oil hole, the part is ready for installation.



This is a universal joint bearing race made in one operation on a 400 ton Verson extrusion press. The press operates at 30 strokes per minute, producing two of the 1 1/16" x 5/16" parts per stroke from AISI-1018 steel.

A Verson Press for every job from 60 tons up

Verson

ORIGINATORS AND PIONEERS OF ALLSTEEL STAMPING PRESS CONSTRUCTION

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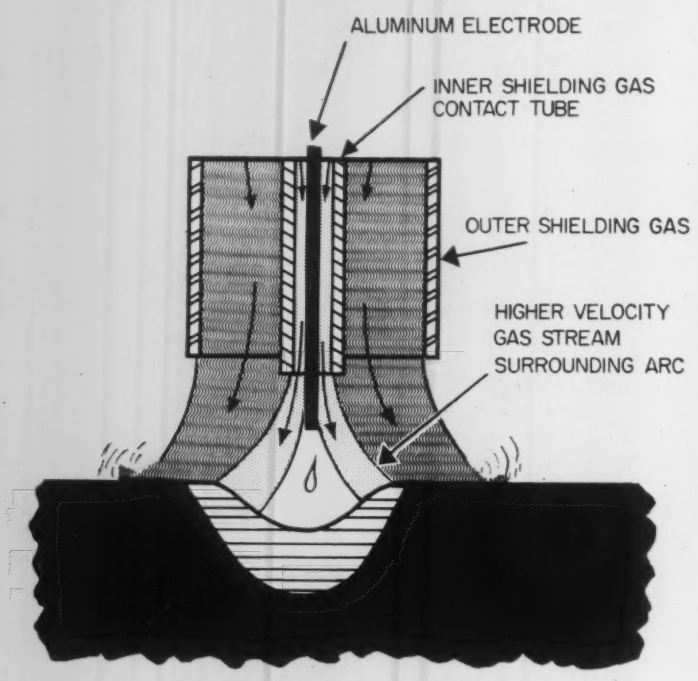
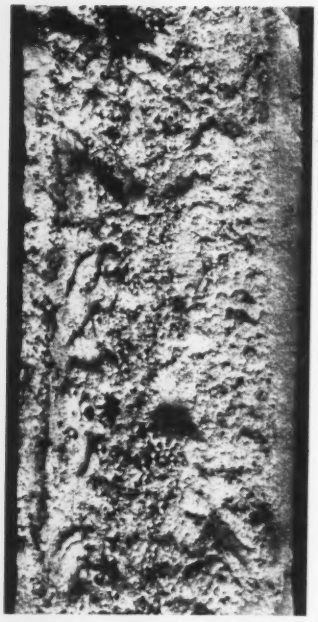
MECHANICAL AND HYDRAULIC PRESSES AND PRESS BRAKES • TRANSMAT PRESSES • TOOLING • DIE CUSHIONS • VERSON-WHEELON HYDRAULIC PRESSES

Kaiser Welding Process



METHOD	SHIELD	
	Inner	Outer
Qualiweld	Argon, or argon and chlorine	Argon
Chlorecon	Argon, or helium and chlorine	Argon, argon and helium, or helium
Econoweld	Argon, or helium	Nitrogen



Fractures illustrate grain structure in a weld. Example (above) shows porosity of conventional

Kaiser

A new gun and three methods have gone a long way toward making better welds at less cost. The basic idea (an inner and an outer gas shield) suggests possible use in other metals

THREE new processes have gone a long way toward eliminating an old problem of aluminum fabricators: Weld porosity caused by trapped hydrogen.

Developed by Kaiser Aluminum & Chemical Corp., Oakland, Calif., they're called Econoweld, Chlorecon, and Qualiweld.

Their key to success is the welding gun. It provides two inert-gas shields (one inside the other) around an arc. The result, say Kaiser engineers, is an improvement of the conventional Mig process (metallic, inert-gas shielded arc).

Tests show that Econoweld saves $5.20 per arc hour while Chlorecon saves $4. Qualiweld costs more than the conventional Mig process, but, of the three, produces the best welds.

Econoweld — The least expensive of the new systems uses argon for the inner shield and nitrogen for the outer. During development, engineers found that nitrogen formed impenetrable nitrides on the top of the first pass. Multipass welds were producing porosity until an operator discovered the answer: Keep arc length on the low side. Instead of snuffing out, the arc penetrated the nitride layer.

Kaiser recommends Econoweld for noncode applications. Example: Joining aluminum bus bars for pow-

MIG welds. Sample (above) shows Qualiweld with same wire and plate

Cost Comparisons for 1-in. Plate

	MIG (Argon 60 cfh)	CHLORECON (Argon)	ECONOWELD (Nitrogen Argon)
Labor and Overhead	$ 5.30	$ 5.30	$ 5.30
Wire	5.77	5.77	6.50
Gas (1/3 duty)	2.20	0.91	0.27
Cost per hour	$13.27	$11.98	$12.07
No. Feet Welded	5	5	7
Cost per foot	2.65	2.39	1.73
Over-all cost reduction		9.7%	34%

Upgrades Aluminum Welding

er stations. It will handle these grades of aluminum: EC, 1100, 3003, and 6061. It is not recommended for any alloy which contains much magnesium.

Chlorecon—This method is midway between the other two in both cost and quality. It produces quality welds in all positions and is cheaper to operate than Qualiweld. In draft-free areas, you need only 15 cu ft of argon an hour, although 20 is much better. A mixture of argon and chlorine is added through the contact tube.

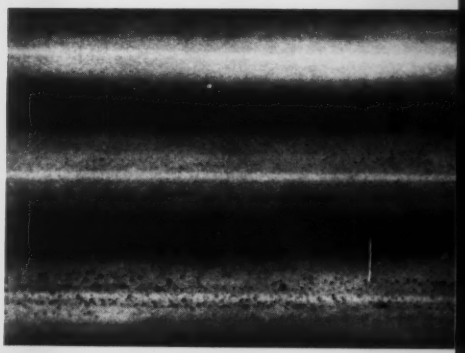
Vertical welding requires some helium in the outer shield. You must use a good filler wire that's free of oxygen and hydrogen.

Qualiweld—A small amount of chlorine in the inner shield accounts for the success of this method. Engineers aren't sure why it improves quality. A small amount added to an ordinary Mig shield proved erratic, but quality became consistent when the gun was modified so that a chlorine-argon mixture could flow through the contact tube next to the electrode.

Bad Actor — To weld aluminum effectively, Kaiser engineers found that hydrogen must be kept out. Here's why:

Molten aluminum attracts atomic hydrogen; solid aluminum contains little. When cooling rates are high (as in welding), hydrogen hasn't time to bubble off. Porosity results.

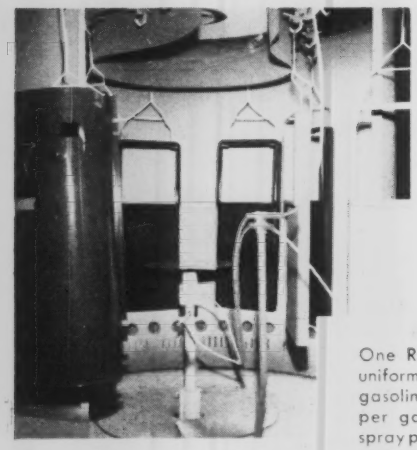
As little as 0.25 per cent hydrogen in the shielding gas around an arc produces porosity that exceeds the standards set by the ASME unfired pressure vessel code. Hydrogen is found in many chemical compounds: Oil, drawing compounds, shop grease, and moisture. Caustic not properly removed from wire can be another source.



Kaiser welding research found hydrogen a bad actor. These radiographs show why. Top weld was made with pure argon shield. The second one contained 0.25 per cent hydrogen; the third 1 per cent

This method attacks hydrogen contamination while the puddle is still molten.

PRODUCTION MORE THAN TRIPLED . . .
PAINT MILEAGE INCREASED 75% WITH



Ransburg
NO. 2
PROCESS

One Ransburg reciprocating disk uniformly coats 7 complete sets of gasoline pump housings and parts per gallon of paint. Former hand spray produced only 4 sets per gallon.

● Bowser, Inc. Fort Wayne Division is continuously on the lookout for improved manufacturing methods in the production of their quality line of gasoline pumps.

That's why they modernized their finishing department . . . installed a conveyor . . . new oven . . . and replaced hand spray with one RANSBURG No. 2 PROCESS reciprocating disk unit.

RESULTS? Paint mileage increased 75% with less labor. With hand spray, they painted enough pump housings and parts for 4 pumps per gallon of paint. Now, with *Electrostatic*, they're painting 7 complete pump sets per gallon.

Where Bowser formerly needed two shifts in finishing, one shift now handles even greater production. With hand spray and limited oven facilities, they used to turn out 15 sets per hour. Now, they can paint 55 sets an hour, either prime or finish. Color changes are made quickly and easily with Ransburg equipment, and because of its efficiency in operation, maintenance cost in the paint area is cut 50%.

NO REASON WHY YOU CAN'T DO IT, TOO!

Whatever your product, if it's painted, we'd like to tell you more about the worthwhile savings and advantages which can be yours with RANSBURG ELECTROSTATIC PAINTING PROCESSES. Write for our No. 2 Process brochure which cites numerous examples of electrostatic spray painting on a wide variety of products.

Ransburg **ELECTRO-COATING CORP.**
Indianapolis 7, Indiana

RANSBURG

Rolls Induction Hardened

What's the right way to harden rolling mill rolls? The progressive induction method is endorsed by Ohio Steel Foundry Co., Lima, Ohio, after three years of trial. The company says it is the first and still the only rollmaker in the U. S. to use the technique.

Steel in forged rolls is first heated above the transformation range by electrical induction, then quenched. Only a small part of the roll is heated and quenched at a time, but the operation is continuous.

The technique gives a high degree of control over hardness penetration. It also reduces internal stresses which may cause failure in service.

For Used Rolls, Too—Induction heating may be used to reharden used rolls without distorting the journals. It is also used to soften the roll to remove original surface hardening and stresses before rehardening. Eliminating distortion in the journals makes it unnecessary to rebuild and remachine them after a rehardening job.

The company has always purchased its forgings, although it pours its own cast rolls. Starting in the fall, it will manufacture its own forgings when its multimillion dollar forging plant in Lima gets into operation.

New Vacuum Melted Alloy

A precipitation hardening, iron-base alloy for jet engines and similar applications has been introduced by the Metallurgical Products Dept. of General Electric Co., Detroit.

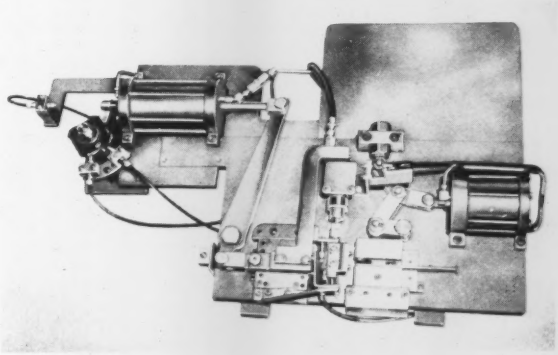
Called J-1300, the vacuum melted alloy has excellent strength-to-weight properties in the 1300 to 1350° F range. Minimum guaranteed tensile strength at 1200° F is 135,000 psi. Rupture strength at 1300° F is comparable to or better than other iron-base alloys at 1200° F, says GE.

Ease of fabrication and high residual strength make the alloy a logical bolt and fastener material. Supplied in forgings and bar stock, the material will also be applicable for turbine wheels, rings, shafts, and compressor wheels and blades.

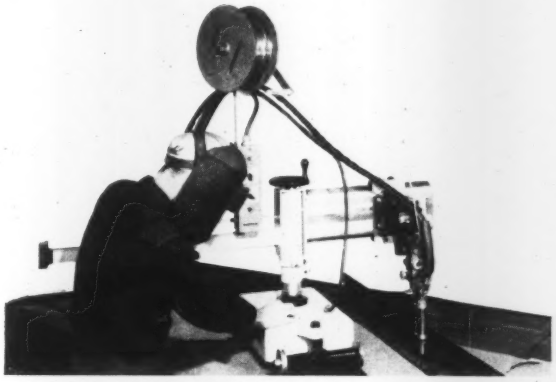
Air-Powered Tube Flaring Machine Increases Production

Tubing to be flared is shown at lower right where it has been placed in a special clamp.

The air cylinder at the right applies pressure to the clamp through a toggle device. Cylinder at upper left advances the die to flare the tubing. An adjustable stroke midget cylinder (center) moves the die to the second position. The action is made continuous and the three cylinders are synchronized by three No. 400 Meadmatic valves mounted below the table. Air cylinders are recessed into the table to reduce the height of their rams above the upper surface of the table. *Write*: Dept. TF-P-49, Mead Specialties Co., 4114 N. Knox Ave., Chicago 41, Ill. *Phone*: Mulberry 5-6800



Portable Welding Unit Is Electrically Driven, Runs on Tracks



The Beetle can be equipped to do automatic welding, heavy-duty cutting, and heat treating. Basic carriage setups do straight line and bevelwork—also Dual Shield, Argonarc, and Gasarc welding.

The complete unit weighs 47 lb. It can carry 750 lb, including the center post and counterweighted beam assemblies. Beams come in two lengths: 74 in. for cutting and 49 in. for welding. They can be raised to 41½ in. above the machine's straight, 10-in. wide track.

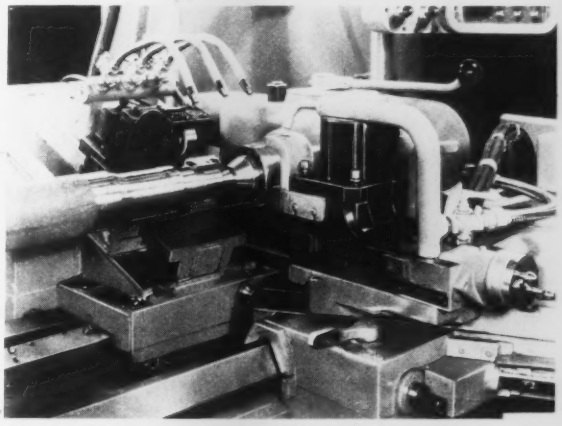
Model 25200 has welding speeds of 9 to 127 ipm. Its lower speed twin, Model 25300, moves from 1 to 14½ ipm. Rate of travel can be adjusted at any time. *Write*: NCG Div., National Cylinder Gas Co., 840 N. Michigan Ave., Chicago, Ill. *Phone*: Whitehall 4-3100

Two-Position Automatic Turret Features Hydraulic Actuation

This lathe attachment is designed to accommodate 1 by 1½ in. tools. It indexes 180 degrees to a positive stop in either direction. Positive turret position locking is done by hydromechanics. Hydraulic pressure for turret action is supplied by the standard hydraulic pump and reservoir system of the lathe.

Operation is entirely automatic. Control is supplied during machining by the multicycle programmer of the Model 21 Mona-Matic lathe for which the unit was engineered.

The turret is generally programmed to index just prior to the last cutting cycle so that one tool is used exclusively for finishing. This can be varied to meet requirements. An on-off switch is furnished so that manual controls can be used. *Write*: Monarch Machine Tool Co., 615 N. Oak, Sidney, Ohio. *Phone*: Hyacinth 2-4111



DU PONT

PRODUCT NEWS

Don't judge the cost of a cleaning process by solvent or chemical costs alone

Du Pont's new Cost Analysis Service can help you determine total costs . . . the only realistic basis of comparison

It's easy to draw misleading conclusions about the comparative costs of vapor degreasing and wet cleaning by comparing only the cost of trichlorethylene versus alkali chemicals. Such conclusions can result in a costly mistake when choosing a metal-cleaning process. *Invoices tell only part of the story!*

Du Pont has initiated this new cost-analysis service to help you find out what your metal cleaning is now costing, or, in the case of expansion or new installations, to help you determine the most efficient and economical process. Based upon sound accounting principles and 25 years of Du Pont "know-how" in metal cleaning, this service reveals the *total* cost of your operation. All cost factors are considered, including utilities, maintenance and depreciation, labor and the important item of "return on investment."

This Du Pont service can save you real money—in your present operation, or in the consideration of new or replacement equipment. Example: in a plant operating 7 degreasers, over-all cleaning costs appeared out of line. Changes adopted as the result of a Du Pont survey paid off in savings of $3,000 to $6,000 per degreaser.

GET ALL THE FACTS about this informative, cost-saving service. Just ask your local distributor of Triclene® D trichlorethylene, or send us the coupon at right, below.

* * *

• Conveyorized vapor degreasing unit cleans oil, grease and chips from machined aircraft cylinders.

Why vapor degreasing with "TRICLENE"® D is ideal for assembly-line cleaning

It's fast—Vapor degreasing with "Triclene" D removes grease, oil, cutting compounds and other contaminants—usually in less than a minute!

It's thorough—Vapor degreasing with "Triclene" D leaves parts clean and dry—instantly ready for the next operation; never causes etching or staining—leaves no deposits of any kind.

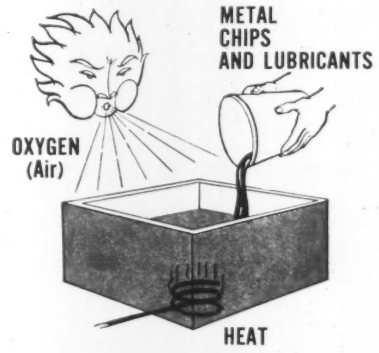
It's versatile—Vapor degreasing with "Triclene" D will clean parts made of all common metals and alloys, in any size or shape.

It's economical—Vapor-degreasing equipment is compact and inexpensive to install. Parts come out dry, eliminating need for dryers—saves valuable floor space. Superior cleaning action of "Triclene" D eliminates rejects, cuts downtime.

It's easy to operate—Anyone can do it. In fact, vapor degreasers can be run automatically. Du Pont will be glad to provide instructions for proper operation of your vapor degreasers if you wish.

▶ **If you would like to know more about degreasing, or want to be sure you're getting the most efficient cleaning from your present degreaser, call your Du Pont "Triclene" D distributor. If needed, he can call in one of Du Pont's metal-cleaning experts. You can also contact any Du Pont district sales office or use the coupon at right.**

FOR MODERN METAL CLEANING



Completely stabilized against breakdown

TRICLENE® D
Trichlorethylene

assures fewer degreaser cleanouts

You can count on brighter, cleaner work and easier, less frequent degreaser cleanouts when you use "Triclene" D.

"Triclene" D contains special stabilizers to protect the solvent against the major deteriorating influences present in modern metal-cleaning operations . . . fatty acids, sulfur-bearing lubricants, oxygen, heat and metal chlorides. These stabilizers, in turn, are backed by a neutral acid acceptor. All of these stabilizers are designed to remain in the solvent indefinitely through distillation after distillation.

The stabilizers in Du Pont "Triclene" D do not combine with fatty acids and other contaminants to form sludge. This is your assurance that your degreaser will maintain peak operating efficiency with fewer, easier cleanouts.

Try Du Pont "Triclene" D and find out for yourself how "full-time" stabilizers make the difference!

New $2 million Du Pont Laboratory will help solve your metal-cleaning problems

In April 1958, the facilities of Du Pont's new Sales Technical Laboratory will provide extra support for the services now offered by your local distributor of "Triclene" D and your Du Pont Technical Representative.

This modern laboratory will have the latest conveyorized production-line vapor-degreasing equipment, including an ultrasonic unit . . . all equipment needed to research problems encountered in both large and small units, hand-operated or mechanized.

Accurate metering devices will make it possible to pinpoint utility costs and to determine solvent losses for all types of production operations. Customers' actual plant conditions can be duplicated and evaluated against norms established at this new laboratory. Actual and theoretical operating costs can be compared.

Ask your Du Pont Technical Representative for further details about this new laboratory—the finest of its kind—soon to be ready to help *you!*

NEW LABORATORY contains 25,000 sq. ft. of floor space and will contain full-scale equipment for demonstration and customer service.

How's your supply of "Tri"?

Check your supply of trichlorethylene and be sure you won't be caught short during peak work loads. If you're low, better give your local distributor of "Triclene" D a call. He's well equipped to handle your orders promptly and efficiently.

DU PONT
REG. U. S. PAT. OFF.
BETTER THINGS FOR BETTER LIVING
. . . *THROUGH CHEMISTRY*

SEND FOR FREE VAPOR DEGREASING BOOKLET

ELECTROCHEMICALS DEPARTMENT
Chlorine Products Division

E. I. DU PONT DE NEMOURS & CO. (INC.)
Wilmington 98, Delaware

E. I. du Pont de Nemours & Co. (Inc.) Electrochemicals Dept., Wilmington 98, Del. S-3

☐ Please send more information on your new cost analysis service.
☐ Please send me your booklet on vapor degreasing.

*Name*_____ *Position*_____
*Present method of cleaning*_____
*Firm*_____
*Address*_____
*City*_____ *Zone*_____ *State*_____

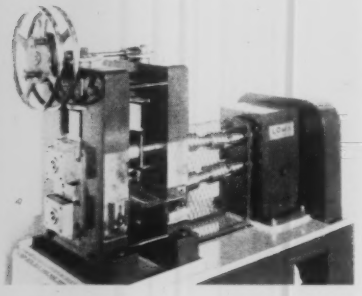
NEW PRODUCTS and equipment

Combination Rolling Mill

Heavy-duty design allows this machine to make reductions of more than 50 per cent per pass while holding tolerances as close as 5 per cent of thickness.

The unit is a high precision, 2-high/4-high combination mill. Changeover time from the 6 by 8 in. 2-high to the 1½ in. and 6 by 8 in. 4-high setup is only 20 minutes. The 2-high arrangement is used for either hot or cold breakdown rolling of plates and sheets.

In the 4-high setup, strip is cold-finish rolled to gages as thin as 0.001 in.



Grooved rolls are available to process rounds, squares, and other shapes.

An optional feature allows the direct compacting of powder into sheets or strip.

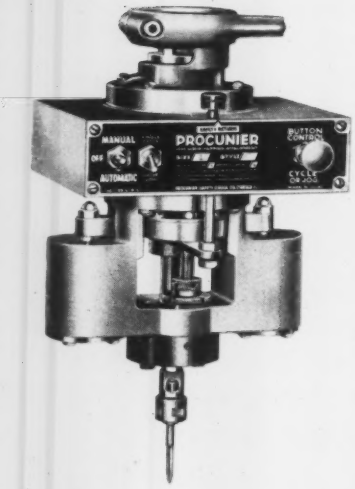
A 15 hp, 4 speed, gear shift drive powers the unit. The total separating force capacity is 175,000 lb. *Write*: Loma Machine Mfg. Co. Inc., 114 E. 32nd St., New York 16, N. Y. *Phone*: Murray Hill 5-6410

Lead Screw Tapping Unit

This attachment produces uniform precision threads with minimum effort and skill. The unit takes its power from standard drill presses and uses alternating current through built-in circuits, which operate twin air cylinders supplying tapping and reversing pressures. Air pressures required range from 18 to 40 lb.

The touch of a pushbutton feeds the tap automatically through its preset cycle without pressure on the tap itself. The unit easily lends itself to automation.

Unit lead screw assemblies are



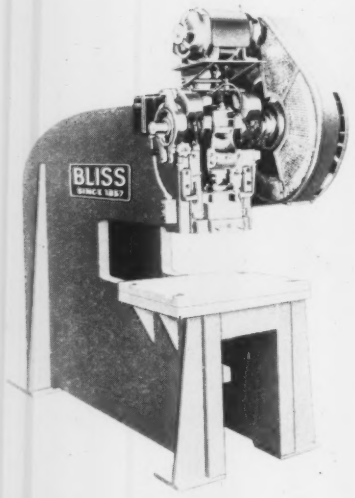
available in any standard pitch from 20 to 96. Tap capacity is from No. 00 to 3 16 in. in steel, ¼ in. in softer materials. Maximum lead screw travel is 1 3 16 in. and thread depth can be held to approximately 0.005 in. *Write*: Procunier Safety Chuck Co., 18 S. Clinton St., Chicago 6, Ill. *Phone*: Franklin 2-1045

Deep Throat Presses

High speed punching, cutting, and forming on large, wide sheets can be done on this line of presses. Included are two bench models of 4 and 7 ton capacities, and six floor models with capacities from 10 to 60 tons.

Throat depths vary from 12 to 34 in. The units will make 90 to 195 stampings a minute.

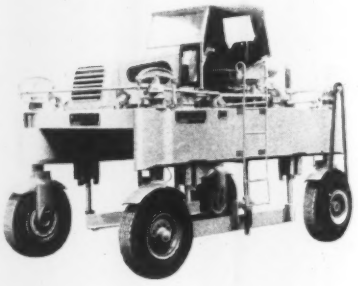
Adjustable stroke presses with capacities from 22 to 60 tons are also available. *Write*: E. W. Bliss Co., Canton, Ohio. *Phone*: Greenwood 7-3421



Heavy-Duty Carrier

This unit features hydraulic swinging shoes which can be operated in or out, and at any lifting height, to facilitate the handling of offsize or hard-to-align loads.

The carrier is powered by a Ford V-8 industrial OHV engine with 332 cu in. displacement. Transmission is syncromesh, five speeds forward and reverse. The 95-in. long lifting shoes will lift 15-ton loads 30 in. at a speed of 10 ips. Wheelbase is 144 in.; turning radius is 174 in.



Safety features include full visibility and four-wheel hydraulic brakes. The tires are 11:00 by 20. *Write*: Gerlinger Carrier Co., Dallas, Oreg., or Towmotor Corp., 1226 E. 152nd St., Cleveland 10, Ohio. *Phone*: Glenville 1-0900

Hydraulic Presses

Typical operations of these high speed, heavy duty, trim presses include swaging, stamping, shearing, blanking, trimming, forming, and drawing. They use a closed, shock-free, pressurized hydraulic system. Units use less than 5 gallons of fluid and operate at low temperatures.

Electrical selector control provides a choice of manual, semiautomatic, or setup cycling. Approach speeds up to 2000 ipm are provided. No time is lost due to slow approach or return.

Unit full tonnage can be set to engage and disengage at any point on the stroke.

These presses are available in two and four post models with ca-

A MOMENT WITH MANAGEMENT . . .

INCREASED PRODUCTIVITY

not merely INCREASED PRODUCTION

will widen your profit margins

Testing offers a new production tool to increase productivity at very low cost. Early detection of all parts headed for the scrap heap enables you to take corrective action *before* additional machining costs are invested in them.

THE PRODUCTION MANAGER will be able to maintain established quality levels (or meet new higher standards) — eliminate intermittent excessive scrapping of finished parts and often even reduce normal parts scrappage.

THE SALES MANAGER will benefit from consistent reliable quality — increased customer satisfaction — reduced or stabilized costs — increased competitive ability.

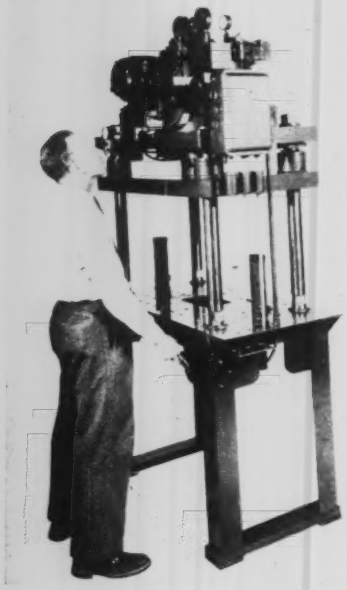
HIGHER PROFIT PERCENTAGE will result because the returns will be increased from your present man-hours and plant investment.

Can you afford to overlook these benefits? Write today for a free copy of "Lower Manufacturing Costs", an informative booklet. Or, ask our Field Engineer to discuss where and how low-cost Magnaflux Test Systems have helped others increase plant productivity.

The Hallmark of *Quality* in nondestructive test systems

MAGNAFLUX CORPORATION • 7312 W. Lawrence Avenue, Chicago 31, Illinois

NEW PRODUCTS and equipment



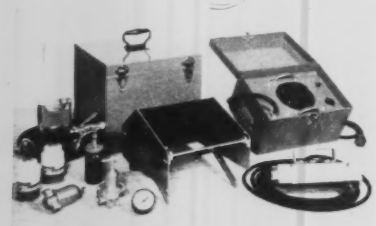
pacities from 13 to 113 tons. They're made by Bausenbach Hydraulics Div., Buffalo Metal Container Corp.

The unit shown is a 20 ton, four post machine. Rapid cycling is achieved with a 3-hp motor. The machine has a 12-in. stroke, 10-in. shut height, and a 24 by 30 in. platen area. *Write*: Arthur E. Bausenbach, 75 Meadow Rd., Buffalo 16, N. Y. *Phone*: Bailey 3944

Honeycomb Inspection

Bondcheck, a kit, is designed for nondestructively testing the bond of honeycomb structures that are soldered, welded, or brazed to skin surfaces.

Test procedure begins by cleaning the part surface and spraying on a special fluid which is repelled by heat and tends to flow to the coolest area of a metal surface. A high intensity infrared lamp is then used (controlled heat method) to show an exact pattern on the bonded areas and a gap where the bonding is defective. Deformed core materials are also readily apparent with this equipment, regardless of shape. *Write*: Magnaflux Corp., 7300 W. Lawrence Ave., Chicago 31, Ill. *Phone*: Underhill 7-8000



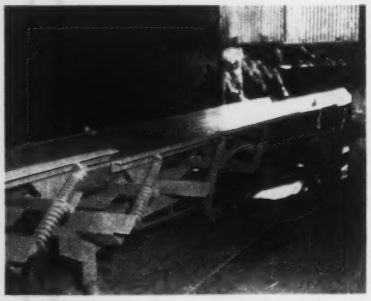
Vibrating Conveyor

These units can be used for movement of granular materials and small parts. They convey material uphill at an angle as great as 5 degrees.

The all-metallic conveyor is a spring-mounted trough, which is vibrated by an air-powered (about 20 psi is required) drive mechanism mounted underneath. Low maintenance cost is claimed: The only moving part is an air piston; it is automatically lubricated.

Three of these 12 ft conveyors are used to transport hot sprues from the shakeout floor to the scrap pile.

Sprues weighing 20 lb are moved at the rate of 220 an hour over a distance of 35 ft.



Units are also available in tubular shapes which operate at angles up to 20 degrees. *Write*: Cleveland Vibrator Co., 2828 Clinton Ave., Cleveland 13, Ohio. *Phone*: Cherry 1-7157

Gas-Fired Furnace

Designed for precision control of atmosphere and temperature, this carburizing-nitriding unit can also be used for all types of general heat treating work at temperatures to 1850° F.

A unique three-point air lifting action raises and lowers the cover. This minimizes the possibility of damaged gaskets or cover misalignment and insures a positive seal.

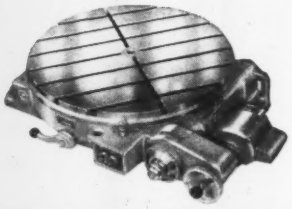
A cast alloy fan in the cover provides uniform heating and atmosphere distribution.

It is constructed of lightweight

Check this Complete Line of

PRATT & WHITNEY

Precision ROTARY TABLES



HORIZONTAL ROTARY TABLES

- 12-Inch Hand Operated
- 20-Inch Hand Operated
- 24-Inch Motor-Driven
- 30-Inch Motor-Driven
- 42-Inch Motor-Driven
- 50-Inch Motor-Driven

OPTICAL ROTARY TABLE

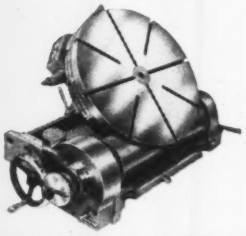
- 24-Inch Horizontal

AUTOMATIC INDEXING

- 42-Inch Horizontal

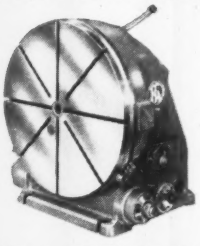
NUMERICALLY CONTROLLED

- 42-Inch Horizontal



TILTING ROTARY TABLES

- 10-Inch Hand Operated
- 16-Inch Hand Operated
- 24-Inch Power Rotated
- 36-Inch Power Rotated



VERTICAL ROTARY TABLES

- 30-Inch Motor-Driven
- 48-Inch Motor-Driven

NUMERICALLY CONTROLLED

- 30-Inch Vertical

PRATT & WHITNEY

Equipped with Numerical Control, this Pratt & Whitney 42" Rotary Table is bringing new standards of speed and efficiency to high-precision work involving circular spacing or angular positioning.

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PRATT & WHITNEY COMPANY, INC.
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Please send my free copy of your Circular No. 619, describing all 16 sizes and models in the Pratt & Whitney line of Precision Rotary Tables.

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16* PRECISION ROTARY TABLES To Choose From!

Whatever your requirements on jobs involving accurate circular spacing or angular positioning, you'll find the *right* rotary table in our complete line. All of the 16 available sizes and models are accurate to a few seconds of arc . . . and if you require the ultimate in precision, the P&W Optical Rotary Table has a guaranteed overall accuracy of *3 seconds of arc*. This is *real accuracy* when you realize there are 1,296,000 seconds in a complete circle!

P&W Rotary Tables are built for ruggedness and stamina as well as precision. Whether you use them in conjunction with jig borers and other tools to save time and set-up in machining operations . . . or by themselves for faster, more accurate inspection, circular graduating or layout . . . P&W Rotary Tables will take continuous, heavy-duty work in stride.

Get all the facts on the 16 sizes and models of Pratt & Whitney *Precision* Rotary Tables now. See how one of these tables can bring new speed, accuracy and economy to your operations. Use the coupon above to send for your copy of our new circular, which tells you all about these precision rotary tables.

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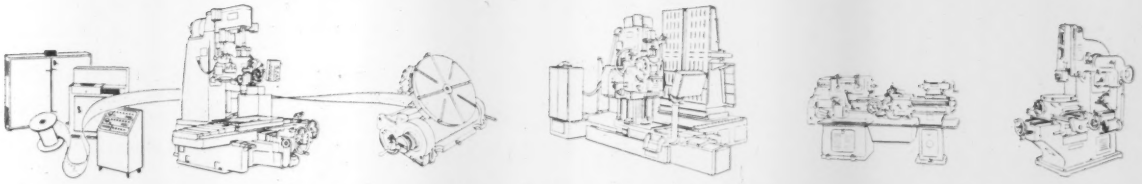
13 Charter Oak Blvd., West Hartford, Conn.



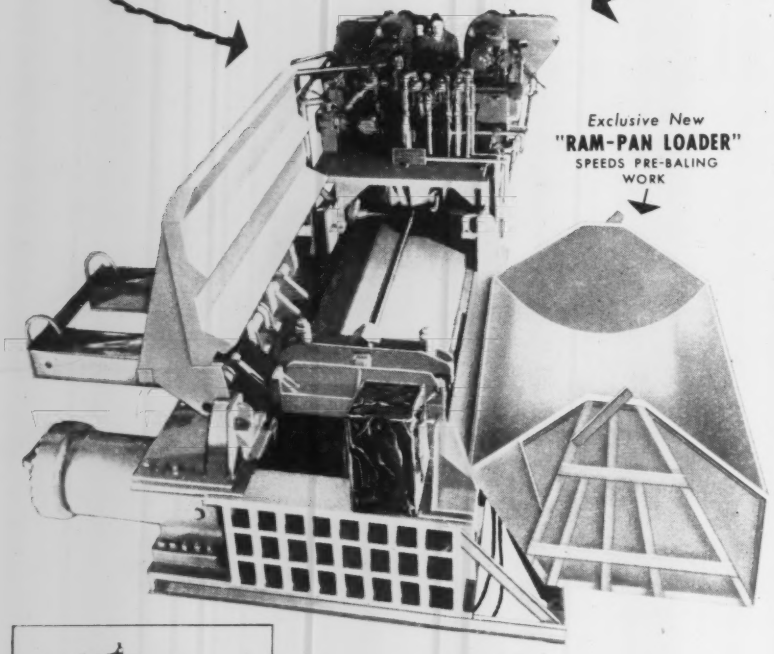
NUMERICAL CONTROL . . . JIG BORERS . . ROTARY TABLES . . . KELLER MACHINES . LATHES . . VERTICAL SHAPERS

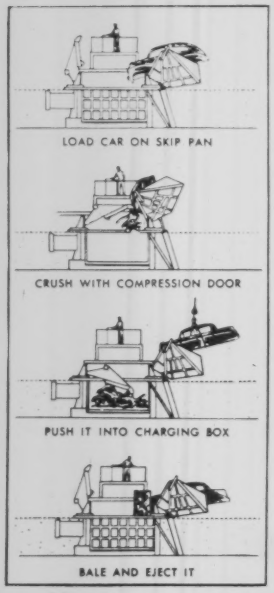
PRATT & WHITNEY

FIRST CHOICE FOR ACCURACY

MACHINE TOOLS • GAGES • CUTTING TOOLS

New Power-Packed "750-CS" ... Bales Car Bodies in Just 3 Minutes!





Low-Investment Balester Does Work of Bigger Presses.

In a feast-or-famine market, versatile equipment pays off! That's the reason for the new 750-CS which handles smaller scrap with unbeatable efficiency and bales car bodies at a pace only slightly off that of the big expensive presses. The powerful new "Ram-Pan Loader" with the curved bottom fits the arc of the compression door as it pushes the car down into the charging box, a pre-baling operation that takes less than a minute and reduces costly cutting or shearing work, all told, you've got a tight compact bale in *less than three minutes!* You'll like the many other new features of the 750-CS; write today for our new bulletin.

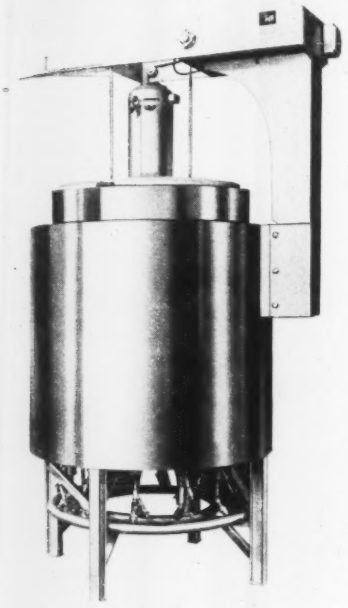
Mfd. By Dempster Brothers, Inc.

DEMPSTER BROTHERS, Dept. S-3
Knoxville 17, Tenn.

WRITE TODAY
For New Bulletin on the
750-CS
Dept. S-3

DEMPSTER BALESTER®

NEW PRODUCTS and equipment



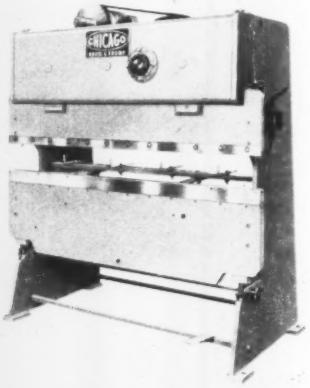
brick and block, staggered and laminated, which makes for low heat loss and high efficiency. When the furnace is under full heat, the outer shell remains cool.

The unit is available in electrical or gas-fired models. Write: Pacific Scientific Co., 6280 Chalet Dr., Bell Gardens, Calif. Phone: Ludlow 3-1121

25-Ton Press Brake

Model 265 bends and forms up to 60 in., 14 gage or 72 in., 16 gage mild steel. It has an all-steel welded frame, and a deep section bed and ram of rolled steel plate.

A variable speed drive and disc type friction clutch provide speeds



Precision TODAY to Gage TOMORROW'S Horizons

Current missile, atomic energy, and other similar projects are demanding gaging instruments capable of measuring with a precision thought impossible only yesterday . . . and of performing inspection jobs of extreme complexity. If *you* are engaged in missile or atomic development projects — or are planning to participate — you can count on Pratt & Whitney to design, develop and produce the special instruments you need.

We offer you a full staff of engineers and technicians, who have AEC and military clearance and work in classified areas. We also offer our proved ability as precision gage makers. We can develop gages to check components of any size or shape, and we can create gages fully integrated with business machines or other recording and analyzing devices. We are specialists in checking polar coordinates of contoured parts and in gaging miniature bearings and similar hard-to-inspect components.

Write, phone or call, and discuss your requirements with us. We're ready to start work now on gaging instruments for your projects. Pratt & Whitney Company, Inc., 13 Charter Oak Blvd., West Hartford, Conn.

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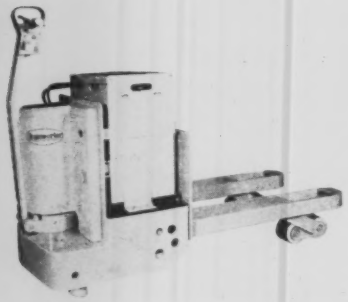
MACHINE TOOLS • GAGES • CUTTING TOOLS

ranging from 20 to 50 strokes a minute. A disc type brake stops the ram upon release of the clutch. Die space can be varied up to 3 in. by manually adjusting the bed.

All bearing and gib surfaces are oiled by a one-shot lubricating system. *Write*: Dreis & Krump Mfg. Co., 7400 S. Loomis Blvd., Chicago 36, Ill. *Phone*: Triangle 4-1200

7½-Ton Electric Truck

WPY-14, a low lift truck, is only 32¾ in. wide and 6 ft ¼ in. long. Minimum required right angle aisle when using 52 by 52 in. pallets is only 79 in. Unit forks are 5 in. off the floor in the low position and



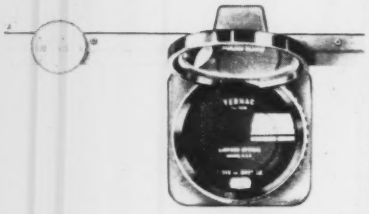
have a 5½-in. lift. They are 7 in. wide and 14 in. apart. A silicone wound, Class H motor provides the power. *Write*: Automatic Transportation Co., division of Yale & Towne Mfg. Co., 149 W. 87th St., Chicago 20, Ill. *Phone*: Radcliffe 3-7000

Optical Vernier

Vernac, a direct reading instrument, indicates longitudinal, lateral, or vertical position of any machining tool table. It can be read to an accuracy of 0.0001 in. without interpolation.

The unit is designed for both new and existing equipment and eliminates inaccuracies due to wear and stretch of table screws, damaged end rods, and gage blocks.

The scale is on precision hardened stainless steel. It is fixed to the tool table and has a maximum error, over its entire length, of 0.0001 in. Scale readings are projected, through a 22 power lens, onto an illuminated dial. Readings are in 0.025-in. intervals and can be refined to 0.0001. No reference to an outside point is required. A mirror on the dial face cover permits readings from various operating positions. *Write*: Simpson Optical Mfg. Co., 3200 W. Carroll Ave., Chicago 24, Ill. *Phone*: Van Buren 6-3030



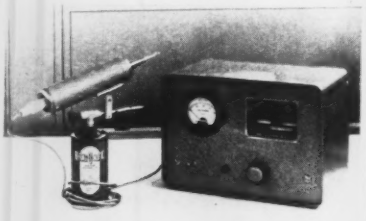
Liquid Preservative

Sabrex is a low-cost liquid used to prevent corrosion of parts and assemblies. It is sprayed on and can be removed by the same method. Although it resists rain and weather, it can also be removed by steam cleaning. Since removal is fast and economical, it is ideal for in-process protection of parts.

The coating protects tooling, machined parts, and temporarily stored machinery. It penetrates nooks and crannies of machined or fabricated surfaces. Self-healing, it dries in minutes and protects for periods up to a year. It need not be removed prior to machining. Write: NaVan Products Inc., Santa Monica, Calif.

Ultrasonic Soldering Iron

This iron is designed for filling casting blowholes, tinning, and soldering on materials like aluminum, magnesium, and their alloys.



The corrosive effects of flux are avoided as ultrasonic vibrations break down the layers that form refractory oxides, and permit soldering without surface treatment. *Write*: Gulton Industries Inc., 212 Durham Ave., Metuchen, N. J.

Let me show you*

**Bob Marr,*
P&J Representative
Houston, Texas.
Telephone: ME lrose 7-3964

how changing to a P&J Automatic helped Reed Roller Bit Company

JOB FACTS:

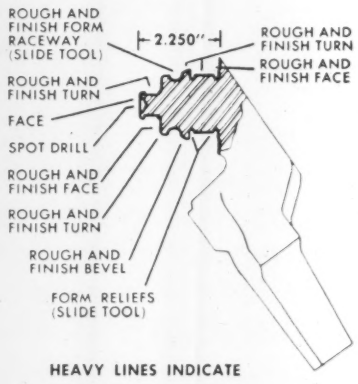
PART: *Lug for Oil Well Bit*

MATERIAL: *AISI 8720 Steel Forging*

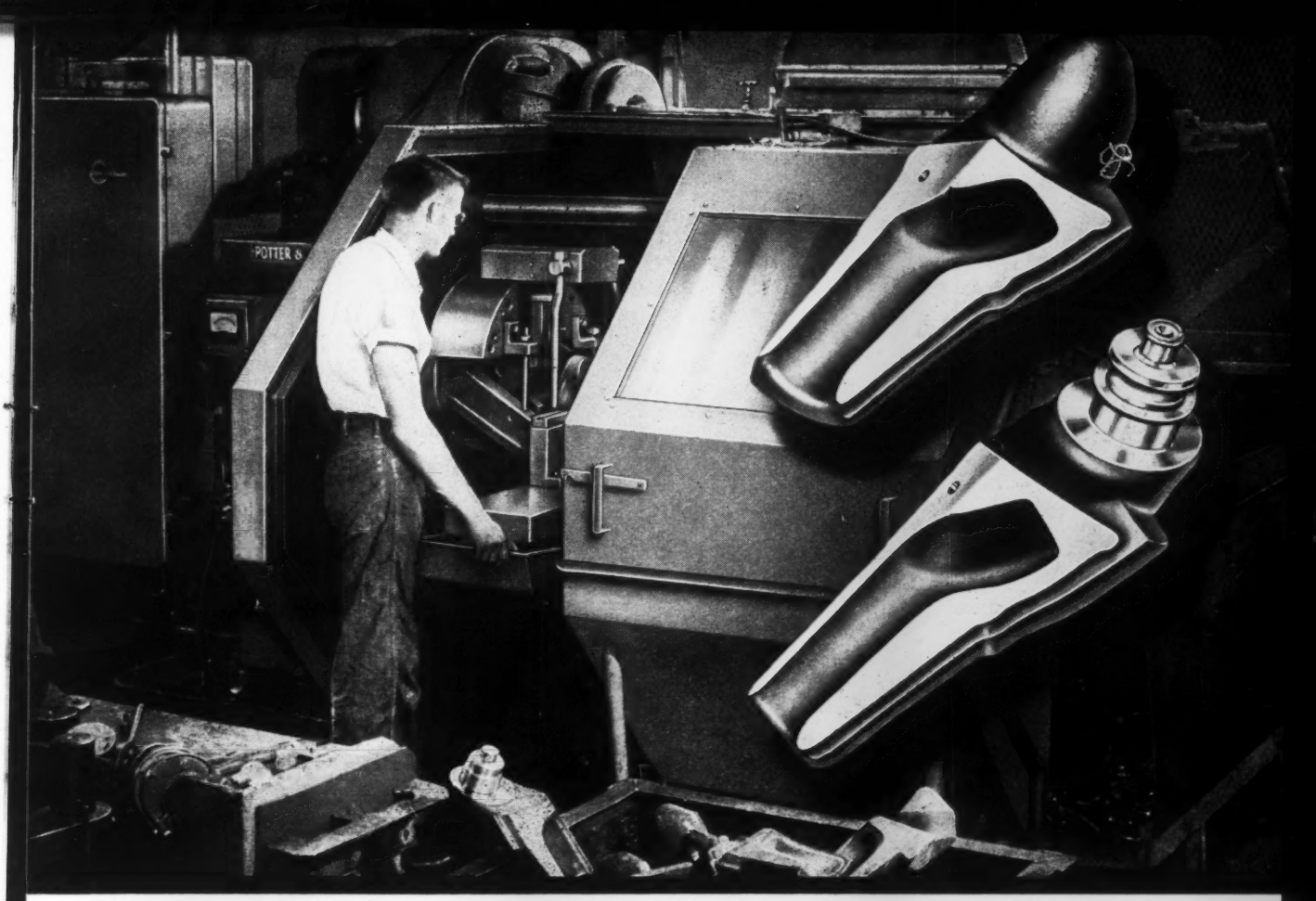
REQUIRED: *Several complex, precision cuts, with certain diameters held to .004" of nominal size.*

THE MACHINE: *A 6DRE-40 Automatic Turret Lathe*

THE RESULTS: *Part completed in single, fully automatic cycle. Machine cycle time just 4.5 minutes!*



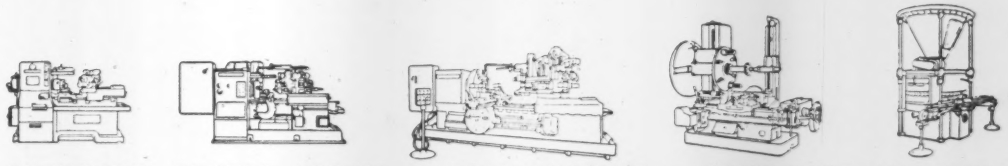
HEAVY LINES INDICATE MACHINED SURFACES



. . . ELIMINATE 4 MACHINES and REDUCE OPERATING COSTS!

One of our Potter & Johnston 6DRE-40 Automatic Turret Lathes was recently installed in Houston, Texas at the plant of the Reed Roller Bit Company . . . a leading producer of oil well drilling tools. Handling a series of complex cuts on a tough steel forging, this new P&J machine and one operator have replaced 5 semi-automatic machines and released four skilled operators for other important work. Machine cycle time has been cut to 4.5 minutes. These reductions have produced important money savings *plus* a big and badly needed increase in output. And in addition to meeting all these basic requirements, the 6DRE-40 has also proved its toughness. Despite heavy metal removal on an exceptionally tough alloy, this P&J Automatic is operated successfully on a 3-shift basis with time out only for routine cleaning and maintenance.

If – like the Reed Roller Bit Company – you have tough-to-machine jobs you'd like to turn out more economically, a switch from hand or semi-automatic machines to P&J Automatics can do the trick for you too! Act today. Ask the P&J Representative in your area to analyze your requirements and recommend a production plan to meet your specific needs. If you prefer, write direct to Potter & Johnston Company, Pawtucket, Rhode Island.

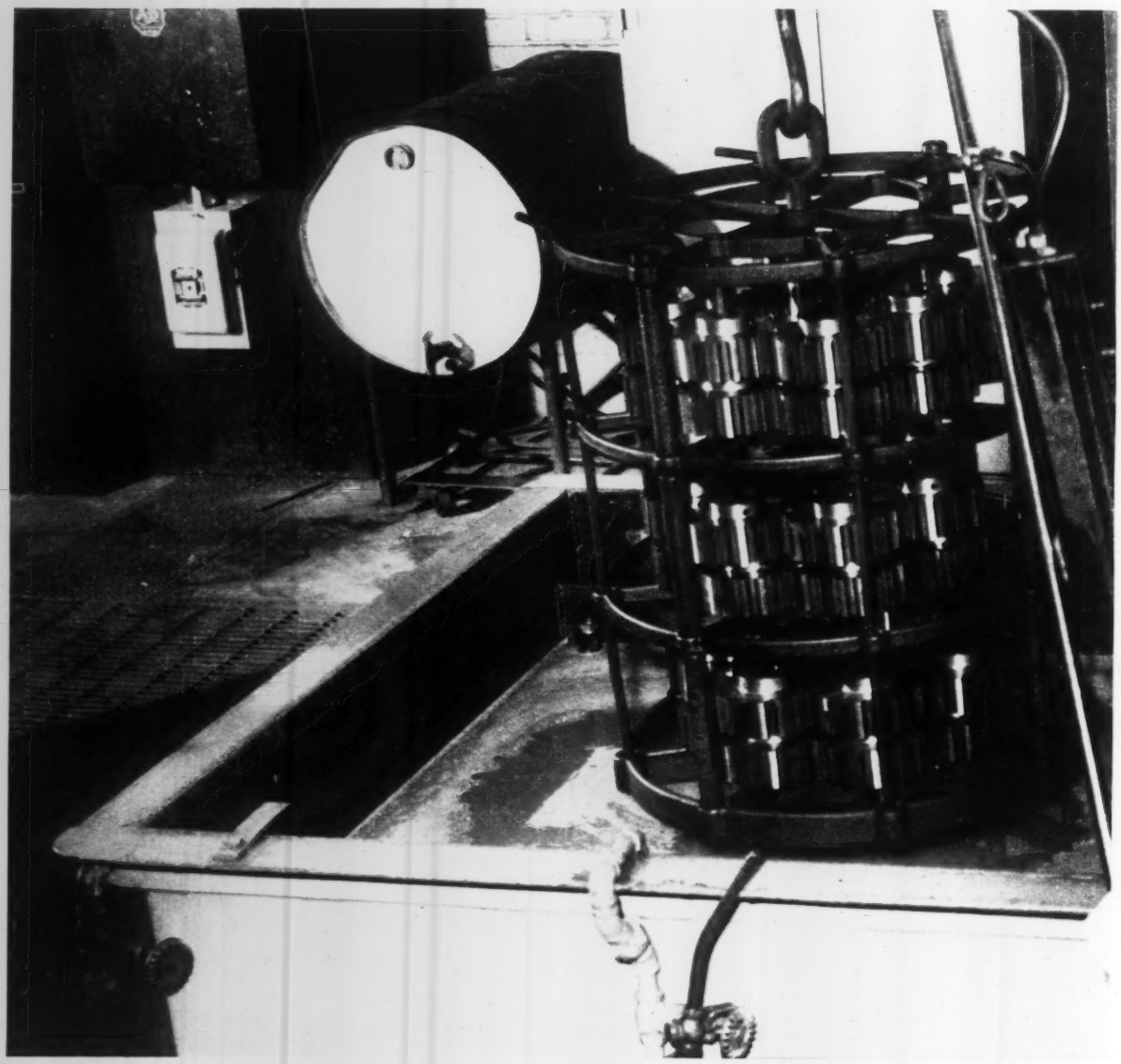


AUTOMATIC TURRET LATHES . . . GEAR CUTTERS . . . PACKAGING MACHINES

POTTER & JOHNSTON

SUBSIDIARY OF PRATT & WHITNEY COMPANY, INC.

PRECISION PRODUCTION TOOLING SINCE 1898



Are you using three cleaning stages

New advances in cleaners are constantly making it easier and cheaper to clean all types of metals. Among the most advanced of these modern easy-to-use cleaners is Houghton's Houghto-Clean line.

Want to turn three cleaning operations into one simple one? It's possible in many plants, through application of a new development in acidic cleaners.. Houghto-Clean 216.

Suppose you want to clean a series of parts which are covered with a combination of light rust, metallic soaps, shop dirt and light oil, a common production line situation. Often the parts may go through three cleaning stages. An alkaline solution removes oil and dirt. Then the parts must be pickled to break up oxides and metallic soaps. And then another alkaline bath is necessary to remove the split soaps and oxide-trapped oil.

One tank does it all

One bath in Houghto-Clean 216 will do the same job. Houghto-Clean 216 is acidic, and can handle light pickling with ease. It is fortified with powerful surface active and wetting agents that loosen dirt, soaps and oil. Though it cannot be used for heavy pickling or on parts treated in cyanide salt baths, it is ideal for many cleaning jobs now using a time-consuming three step procedure.

The versatility of Houghto-Clean 216 gives it an additional cost-saving advantage. It can be used to replace several other types of cleaners because it is also an efficient cleaner for non-ferrous metals, removes welding fluxes, and can be used in abrasive tumbling where acid roughing is desired. It is shipped as a dry, easy-to-handle powder.

when one will do?

Alkali Cleaners, Surface Active Agents

The same type of development work that produced this effective acid cleaner has also given industry a wide selection of Houghto-Clean alkaline cleaners and surface active agents. *Houghto-Clean 245*, for example, is an alkaline cleaner which readily cleans parts treated in salt baths and liquid carburizers, and is equally able to remove oil, grease and pigmented drawing compounds.

Cerfax Liquid is a surface active agent that needs no special equipment, is extremely economical to use, and eliminates the early rusting so common with some other types of cleaners.

A condensed checklist of Houghton cleaners is at right. Ask the Houghton Man for technical information on the ones which interest you, the next time he calls.

Check your cleaning needs against "The Houghton Line of Modern Cleaners"

- ☐ Floors, Walls and General Maintenance . . . **Houghto-Clean 210**
- ☐ General Purpose Tank Cleaner . . . **Houghto-Clean 240**
- ☐ Power Washers . . . **Houghto-Clean 205** or **270**
- ☐ Aluminum . . . **Houghto-Clean CS**
- ☐ Emulsion Cleaner . . . **Houghto-Clean 220**
- ☐ Salt Bath Cleaner . . . **Houghto-Clean 245** and/or **Cerfak Liquid**
- ☐ Acid Phosphate Cleaner (prior to painting) . . . **Houghto-Clean 313-A**

COLD CLEANERS

- ☐ Removal of drawing oils, light cutting oils, rust preventives, general shop soil, at room temperature . . . **Houghto-Clean 400 Series**
- ☐ Rust Removers . . . **Houghto-Clean No. 29**—Heavy duty for ferrous metals.
  No. 34—Light and medium duty, for ferrous metals. Dip type.
  No. 35—Wipe off type for iron, steel, cadmium, terne-sheet, and brass.
- ☐ **SURFACE ACTIVE AGENTS**
  Cerfak Liquid, a synthetic detergent for oil quenched work. Use 1-75 with water at 180°—200°F. in tanks.
  Cerfak 1400, high wetting and detergency —for cleaning or rinsing prior to plating, etc.

Write for Booklet

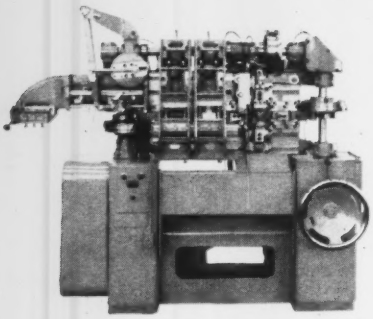
If you'd like to receive a free copy of Houghton's newest booklet on metal cleaning compounds, write E.F. Houghton & Co., 303 W. Lehigh Ave., Philadelphia 33, Pa.

HOUGHTO-CLEANERS
. . . products of

E. F. HOUGHTON & CO.
PHILADELPHIA · CHICAGO · DETROIT · SAN FRANCISCO

Ready to give you on-the-job service . .

THE FIRST ENTIRELY NEW FOUR-SLIDE IN FIFTY YEARS!



A development of industry-wide importance is the Torrington Verti-Slide—a new vertical 4-slide that is the first major innovation in the basic field of wire and strip forming equipment in half a century!

The Verti-Slide was designed to meet a serious need for greater versatility, lower tooling cost, faster set-up time and reduced floor space. We urge you to investigate the new Torrington Verti-Slide in detail.

THE TORRINGTON MANUFACTURING COMPANY

TORRINGTON, CONNECTICUT • VAN NUYS, CALIFORNIA • OAKVILLE, ONTARIO

NEW literature

Write directly to the company for a copy

Tubular Products

This illustrated booklet, TB-417, presents information on tubing, pipe, and welding fittings. Included are application data, selection of materials, analysis, physical, mechanical, and creep strength properties of various steels. Tubular Products Div., Babcock & Wilcox, Beaver Falls, Pa.

Roller Pipe Cutters

Bulletin D-69-6 lists sizes and models of manual, air, and automatic equipment. These cutters can handle ⅛ to 6 in. diameter pipe. Landis Machine Co., Waynesboro, Pa.

Vapor Degreasing

This bulletin outlines 13 major advantages claimed for vapor degreasing in production cleaning and in metal surface preparation for electroplating, painting, and other finishing operations. Chlorinated Products Div., Diamond Alkali Co., 300 Union Commerce Bldg., Cleveland 14, Ohio.

Vibratory Feeder Catalog

This 32-page booklet contains data and specifications for 13 standard vibratory feeders, three hydraulic or pneumatic feeders, and spiral elevator feeders, plus specially engineered models. Syntron Co., 370 Lexington Ave., Homer City, Pa.

Classifiers and Separators

Bulletin No. 39-C, 24 pages, covers classifiers, hydroseparators, washers, and heavy media separators. One section covers a new belt-type classifying device with sand cleaning features. Hardinge Co. Inc., 240 Arch St., York, Pa.

Tooling

Catalog KL-58 covers toolholders with throwaway inserts. Included are clamp screws, and carbide shims, chip breakers, inserts, and clamps, all of which are part of the insert holder. Metal Carbides Corp., Youngstown, Ohio.

Glass Fiber Plating Tanks

This brochure illustrates and describes a line of noncorrosive type plating tanks. Plastics Div., L. A. Darling Co., Coldwater, Mich.

Four-Slide Machine

Catalog No. V-187 contains information on this company's Vertiform unit and lists the advantages of vertical four-slide equipment. A. H. Nilson Machine Co., Shelton, Conn.

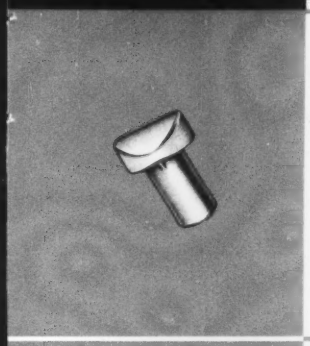
Bronze Valve Catalog

A complete line of valves is covered in this catalog. Separate sections are devoted to heavy duty valves, heating specialties, and solder joint valves. Dimensional information is included. Hammond Brass Works, 1844 Summer Blvd., Hammond, Ind.

KEYSTONE XL WIRE STUDY

5 WAYS

TIME SCREW & MFG. CORP. finds KEYSTONE *XL* WIRE BEST!

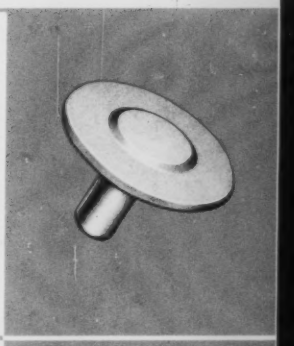


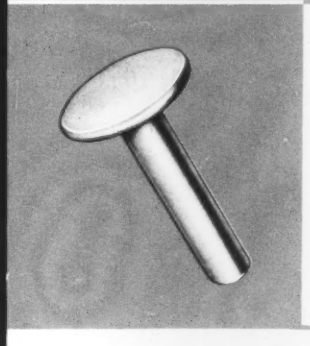
No Surface Cracks

This is an insert for an engine rocker arm assembly. When cold formed from other wires, surface cracks appeared. Keystone "XL" Wire eliminated these cracks.

Maximum Head Spread

Here's a part formed to hold a rubber molding, where maximum head spread is demanded. Other wires cracked at the spread—Keystone "XL" Wire does the job.



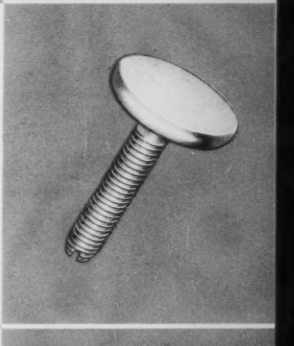


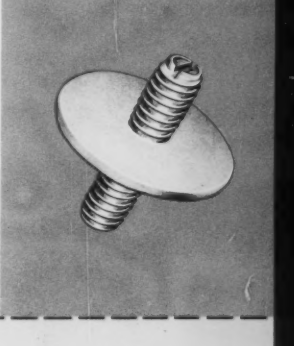
100% Inspected

Time Screw inspects these engine tappets 100%. No fine line cracks on sides are acceptable. With Keystone "XL" Wire, rejection is less than ½ of 1%.

Double Extruded

To get the head of this automotive part to its desired size, Time Screw double extruded Keystone "XL" Wire. The head is about 10 diameters greater than the body.





Cold Heading Saves 70%

This fastener was formerly a two-piece set with a washer welded on the body. Now it is upset by Time Screw with Keystone "XL" Wire, saving 70% in costs.

Illustrated are five of the many ways Time Screw & Mfg. Corp., Rockford, Illinois, employs quality Keystone "XL" Wire to its best advantage.

As Leslie K. Pearson, Vice President of this progressive Rockford manufacturer, states: "We've found that Keystone 'XL' Wire can be used on any job, no matter how difficult."

Flowability is the secret, and the key, to the amazing adaptability of Keystone "XL" Wire. Its versatility is recognized by wire users who have turned to Keystone for assistance in solving their tough jobs. Next time you are confronted with a wire problem, call your Keystone Wire Specialist. You'll find him—as well as all members of the Keystone organization—ready and willing to assist you.

Keystone Steel & Wire Company, Peoria 7, Illinois

KEYSTONE

WIRE FOR INDUSTRY

KEYSTONE STEEL & WIRE COMPANY
PEORIA 7, ILLINOIS

Brand New . . . COLD HEADING FACTS FOLDER . . . send coupon today! New folder discusses uses, applications, methods, technical facts, wire requirements.

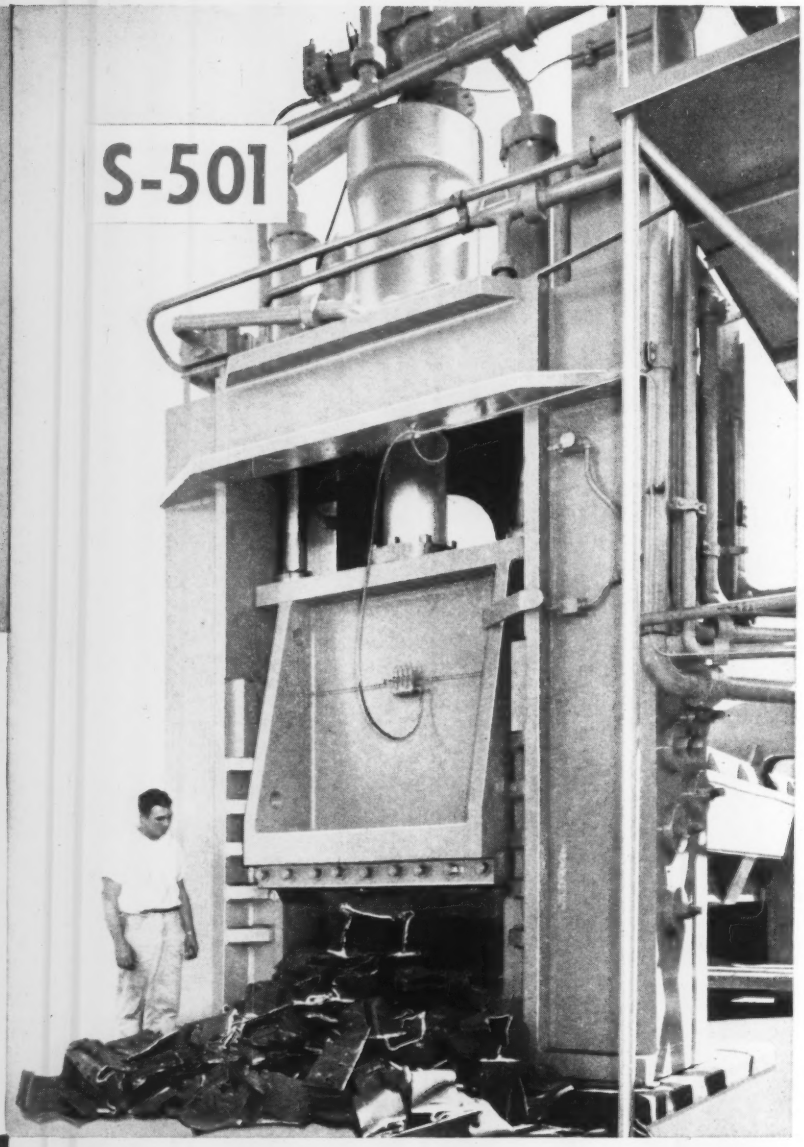
Name_____ Title_____

Company_____

Street_____

City_____ State_____

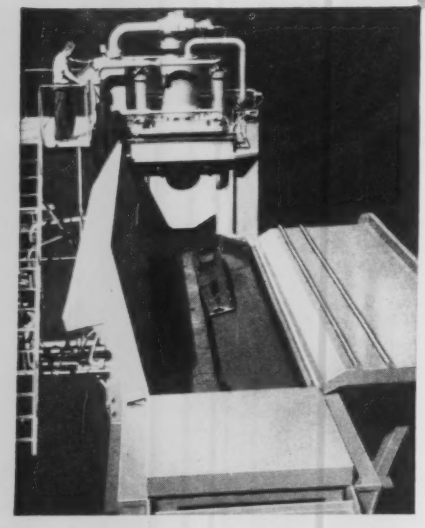
CUTS 200 TONS PLATE SCRAP IN EIGHT HOURS



production is continuous

labor costs 70% lower

The Harris Shear is revolutionary in design. It is the first new development in the scrap industry since the introduction of the Baling Press. Railroad scrap, pipe, farm, industrial, automobile and miscellaneous junk shop scrap work through on a 12 second cycle. A 3 man crew and a crane handle the job in all kinds of weather.



The charging box is 264" x 80" x 30". It has a flat type loading hopper. The cover and charging ram operate like a baler. This means more material under each stroke of the knife.

The Harris Shear brings new profits to Scrap Yards

HARRIS FOUNDRY & MACHINE CO.

Hydraulic Engineers Since 1889

CORDELE, GEORGIA

Talk with a Man from Harris

Market Outlook

"A 4.8 MILLION-CAR-YEAR should result in production of about 90 million to 95 million tons of steel if all other markets follow at their normal rates," says the commercial research manager of a leading steel company.

"The drop in estimates of car production this year doesn't worry us," he continues. "We hadn't expected a banner car year, and at any rate, construction is really the leading customer of steel mills. We look for a gradual uptrend all year in steel production."

LOOKING AHEAD—Steelmakers say privately that there's little likelihood we'll be using 140 million tons of steel annually for a long time, barring war emergencies. It's possible, though, that the industry could be forced into near-capacity operations as early as the first or second quarter of 1959. At that time, customers may be worried about a steel strike. They'll want to rebuild inventories which have fallen to abnormally low levels.

DETROIT HEDGES—Automakers are trying to hold cold-rolled sheet inventories down to 15 days, but few are successful. Most supplies range from 18 to 20 days to more than a month. Purchasing agents are being told not to order any steel which would be used in automotive production later than the end of May.

TIN PLATE BRIGHTENS—Tin plate sales are beginning to climb and should be strong in the second quarter. Weirton Steel Co. is operating at 72 per cent of capacity this week. Another producer reports shipments are running at 80 to 85 per cent of year-ago figures.

IMPORTS HURT—Elsewhere, the market continues to be gloomy. Merchant wire, usually strong at this time of year, is adding little strength because of foreign competition. Since 1953, European steelmakers have greatly increased their exports of wire fence, nails, barbed wire, and reinforcing bars to the U. S.

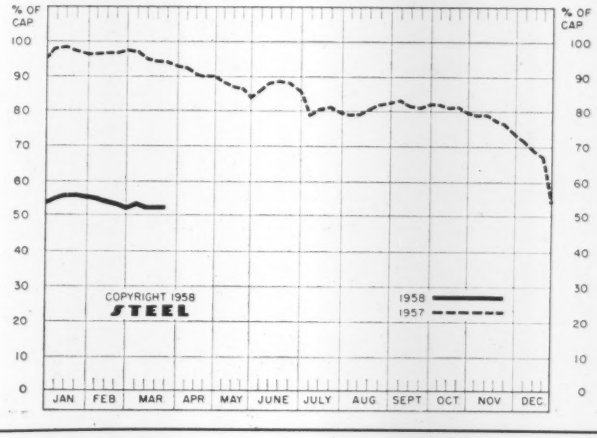
WIRE PRODUCERS SUFFER—Atlantic Steel Co., Atlanta, has been hit particularly hard by imports. Unfortunately for Atlantic, foreign wiremakers have unloaded their biggest tonnages at New Orleans, Galveston, Tex., and Florida. Result: Atlantic's 1957 sales of barbed wire were 84 per cent below the 1953 level. Fence sales were down 72 per cent; reinforcing bars, 40 per cent; and nails, 30 per cent.

QUESTIONS POLICY—Appearing before the House Ways & Means Committee, Robert S. Lynch, Atlantic's chairman, told how falling sales had forced his company to lay off a third of its workers and omit a dividend for the first time since the depression. Like troubles will beset other American firms, he warned.

WILL CONGRESS ACT?—It seems unlikely that Congress will alter its trade policy. Despite higher imports of a few iron and steel products last year, the balance sheet was strongly in our favor: Imports fell from 2 million to 1.8 million net tons, while exports climbed from 5.2 million to 7 million tons.

OUTPUT UNCHANGED—Steelmaking operations held at 52.5 per cent of capacity last week. Production was about 1,415,000 net tons of ingots for steel and castings.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of Capacity Engaged)

	Week Ended Mar. 23	Change	Same 1957	Week 1956
Pittsburgh	55.0	+ 1.5*	95.5	102.5
Chicago	55.0	— 3.0*	89.5	101
Mid-Atlantic	53.0	— 3.0	97	99
Youngstown	47.0	— 5.0	96	84
Wheeling	73.0	+ 3.0	95	96
Cleveland	35.0	— 3.0*	89.5	105
Buffalo	36.5	0	100	96
Birmingham	47.5	— 2.0	99	82
New England	53.0	+ 3.0	67	93
Cincinnati	54.0	+ 0.5	80	100
St. Louis	73.0	— 6.0	102	100
Detroit	44.0	— 1.5*	92	100
Western	67.0	— 2.0	106	103
National Rate	52.5	0	94	98.5

INGOT PRODUCTION‡

	Week Ended Mar. 23	Week Ago	Month Ago	Year Ago
INDEX (1947-49=100)	88.1†	91.1	85.5	148.9
NET TONS (In thousands)	1,415†	1,463	1,373	2,392

*Change from preceding week's revised rate. †Estimated. ‡American Iron & Steel Institute. Weekly capacity (net tons): 2,699,173 in 1958; 2,559,490 in 1957; 2,461,893 in 1956.

Metalworking Outlook—Page 55 Technical Outlook—Page 103

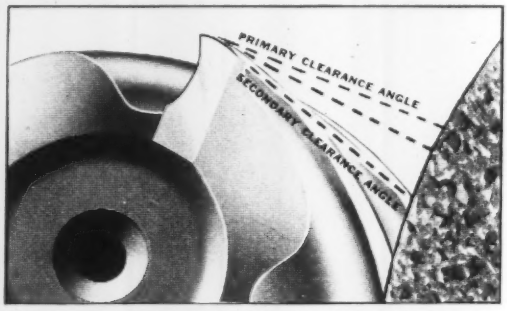
COMPARE this DoALL 3-flute end mill...

Three flute end mills with 2" diameter and 2" shank in 4", 6", 8", and 10" flute lengths—another case of how specials are *standard* at DoALL.

it gives you the plunge-cutting advantages of 2 flutes . . . the fine finish of 4 flutes!

You can greatly cut your milling time and costs with this DoALL End Mill. One fast operation eliminates the need of both rough and finish cuts. No extra cost for this DoALL double-feature advantage, either. Also available with ball ends.

Turning out your work faster is only the start of it. Like all DoALL End Mills, it will turn out the work longer as well. Special high-speed, high-strength DoALL steels is one good reason. So are all these others: DoALL End Mills are completely finish ground with polished flutes after hardening and have a high helix angle which promotes smoother cutting . . . spiral flutes are hollow ground for better chip removal and less abrasive action.



Radial ground double back-off design gives maximum strength on the cutting edge for highest speeds and feeds.

one of over 600 sizes — DoALL stocks many standards which are specials with others!

No compromising on *what* you want and *when* you want it with DoALL End Mills. Your needs are met completely and quickly from your nearby DoALL Sales-Service Store, where top stocks totaling over 600 different types and sizes are within one-call reach. Profit from this specialized end mill service now!

CT-37

FREE FOR YOU! The end mill speed selector chart that makes sense by saving time and chance of error! DoALL has put recommended speeds in *revolutions per minute*. A glance gives you your setup answer for every job. No cost just call your DoALL Store.

Find Your DoALL Store In The 'Yellow Pages'

THE DoALL COMPANY, Des Plaines, Ill.

Call Your DoALL Service-Store

MACHINE TOOLS ..... CUTTING TOOLS ..... MEASURING INSTRUMENTS ..... SHOP SUPPLIES IN STOCK

U. S. Steel Corp.

U. S. Ore Stocks

(In gross tons)

Ores by Source	Feb. 1, 1958	Feb. 1, 1957
Lake Superior	41,152,684	33,771,445
Other U.S.	3,458,998	3,122,897
Canadian	7,026,079	5,475,054
Other Foreign	7,569,807	4,393,909
Totals	59,207,568	46,763,305

Source: American Iron Ore Association.

Ore Stocks Are Heavy

With stocks up and consumption lagging, ore shippers are going to wait for ice to melt. They don't intend to use full fleet even when season does open

U. S. ORE STOCKS are ample even if weather should delay the opening of shipping on the Great Lakes until May 1. "With stocks what they are and consumption figures what they are, you can bet no one will be breaking any ice this year," is the way one major shipper describes the position.

Stocks—U. S. and Canadian supplies of Lake Superior ore were higher on Feb. 1 than they have been on that date for many years. Stocks of imported ore (excluding Canadian) are showing up in increasing amounts, too. The Pittsburgh-Youngstown district has 3.4 million tons of foreign ore stockpiled, vs. 1.7 million tons at this time last year.

All districts show increases over year-ago figures: Eastern district stocks are up 2.3 million tons; Pittsburgh-Youngstown district stocks, 3.8 million tons; Cleveland-Detroit district stocks, 3.4 million tons; Chicago district stocks, 1.5 million tons.

At the present rate of consumption (7.6 million tons per month, vs. a monthly rate of 11.5 million tons in '57), U. S. ore stocks could last until August.

Weather—Ice in the upper lakes is heavy. Predictions are that lake boats will be able to move freely by Apr. 15, but, for a change, it really doesn't matter. None of the major shippers is planning to move early. With stocks plentiful, they don't want to chance boat damage.

Shipments—When they do move, most shippers are planning to use only 50 to 70 per cent of their fleets. They'll use their larger boats and leave the smaller ones behind. Look for Lake Superior ore shipments this year to drop from last year's 84.6 million tons to about 65 million to 70 million tons. Business uncertainty clouds predictions, but the most optimistic expect shipments to run only about 80 per cent of last year's figures. Production will far outstrip shipments.

Around 6 million tons of taconite and jasper will be shipped in 1958.

New Source—Jones & Laughlin Steel Corp., in partnership with Cleveland-Cliffs Iron Co., has a 99-year lease on 5640 acres in northern Quebec as a site for an iron-mining operation that could develop into one of the world's largest.

Situated in the Mt. Wright area 500 miles northeast of Quebec City, the land is said to hold at least 1 billion tons of crude ore containing about 30 per cent iron. Indications are that the ore is nonmagnetic and

coarser than Minnesota taconite. Compared with taconite, its beneficiation should be less difficult and more economical.

The area was leased from Quebec Cobalt & Exploration which staked it out under a concession granted by the Quebec provincial government. No plans for development have been announced.

New Ships—Interlake Steamship Co., Cleveland, has two ships under construction. One (capacity: 24,000 tons) is expected to be ready this season. The other (capacity: about 23,300 tons) will be completed by next spring. The largest ship on the lakes has been the *George M. Humphrey*, owned by the M. A. Hanna Co., Cleveland. Its capacity is 23,200 tons.

Oglebay Norton Co., Cleveland, has a 20,000-ton ship under construction.

Imports—Foreign ore continued to come into the U. S. last year in record amounts. Shipments were above 32 million tons. Imports from Canada accounted for 11.6 million tons.

Because consumption is down, we may expect iron ore imports to drop noticeably this year. But in the long run, imported ore will continue to make up an increasingly important part of our supplies.

Sheets, Strip . . .

Sheet & Strip Prices, Pages 160 & 161

Sheet steel buying continues slow, but it is sustained. Fabrication is still outpacing purchases, and stocks are shrinking steadily. Buyers are not too concerned about replenishing inventories because they can obtain quick deliveries from mills.

Hot-rolled sheets are available within two weeks (sometimes a week); cold rolled can be had in two to three weeks, even less on occasion; galvanized deliveries range from one to two weeks. Specialties, such as electrical sheets and enameling stock, are shipped within three weeks.

Until delivery promises become more extended than they are, the average buyer is not likely to worry too much about reduced stocks. Autobuilders are using about 70 per cent as much sheet tonnage as they were a year ago, says a Pittsburgh producer. Some of that firm's leading customers have been letting their inventories drop steadily over the last 12 months.

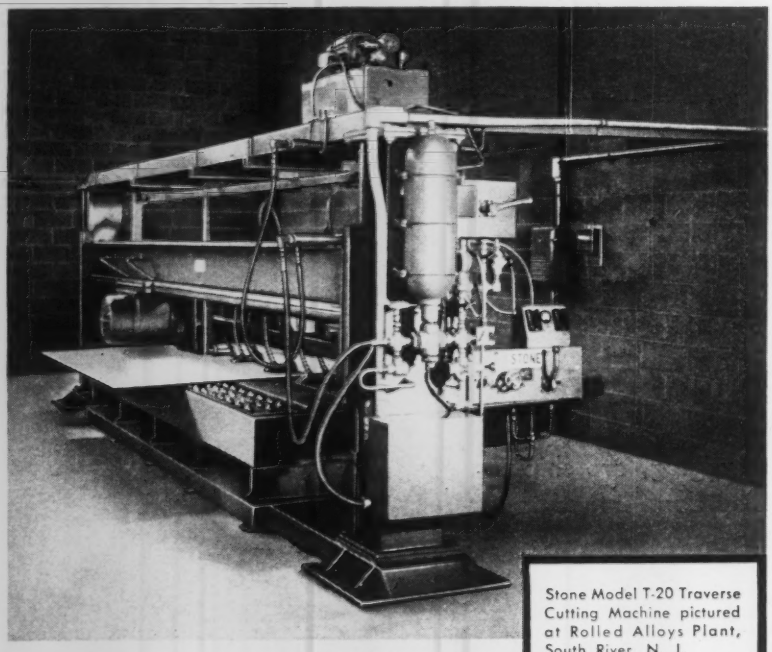
A slight improvement in demand for electrical grades in coils is developing in New England. Long ternes and aluminized sheet inquiry also is up slightly. One district seller is running about 10 per cent ahead of February on flat-rolled stainless tonnage. Galvanized sheets are moving better seasonally.

While it is probable that some buying will be stimulated by the prospects of higher prices July 1 to offset a scheduled wage hike, most observers are of the opinion there won't be much in the way of hedge ordering unless manufacturing operations show definite improvement soon.

Cold-rolled sheet production is down in the St. Louis district as the result of the closing of Granite City Steel's cold mill for installation of new motors. It will be down four weeks.

Atlantic Steel Co., Atlanta, is quoting hot-rolled strip at $4.925 per 100 lb, off $4 from the level recently quoted. The new price is in

2⅔ FEET PER MINUTE Through 1″ STAINLESS!



Stone Model T-20 Traverse Cutting Machine pictured at Rolled Alloys Plant, South River, N. J.

Solve your sheet-and-plate-cutting problems . . . get finished edges, cut to exacting dimensions at high speeds with the Stone Model T-20 Traverse Cutting Machine.

The Stone Model T-20 cuts up to 4″ ferrous, 8″ non-ferrous and non-metallic sheet and plate. Patented stainless, preloaded and sealed roller-ways permit long, continuous trouble-free operation. Completely rigid cutting head beam may be lowered by thousandths of an inch per minute for precision step-cutting, etc.

Full hydraulic control . . . lateral feed speeds from 0′ to 50′ per minute . . . 20 HP geared-in-head continuous duty motor . . . length of cut, 12′ (greater lengths available) with raise and lower of 18″

Bring your cutting problems to Stone.
For more details and specifications, write:

STONE MACHINERY COMPANY INC.
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line with that quoted by other leading producers.

Tin Plate . . .

Tin Plate Prices, Page 161

Shipments of metal cans in January totaled 323,660 tons, up from 292,210 tons in December, and also from the revised figure of 314,689 tons in January, 1957.

The movement of fruit and vegetable cans rose, amounting to 79,033 tons, against 68,374 tons in December and 69,983 tons in January, 1957. Beer can shipments (second largest category) amounted to 54,260 tons, vs. 56,515 tons in December, and 48,952 tons in January, 1957.

March shipments of tin plate are improved over the February level. Production is expected to rise rapidly in April and to remain high through the second quarter. One major Pittsburgh maker estimates orders and shipments are running about 85 per cent of what they were a year ago.

Steel Bars . . .

Bar Prices, Page 159

The fact that business continues poor and there has been no appreciable change in order volume for several weeks indicates that commercial steel bar business is scraping bottom. Sellers anticipate no further decline in April, and they would not be surprised if demand increased.

Consumers' stocks are still sliding.

The situation is ripe for an upturn in buying the moment there is any appreciable pickup in requirements. Some sellers already profess to note a slight improvement, but others see no change in market conditions. This is true of all types and grades.

Deliveries of hot carbon bars depend on rolling cycles, but buyers have no difficulty in getting a mill to make shipments within a week to ten days. Nor do they have trouble getting quick shipments on cold-drawn bars.

Stainless Steel . . .

Stainless Steel Prices, Page 163

Effective Mar. 12, Republic Steel Corp., Cleveland, announced additions to its stainless pricing manual:

Two side inspection-cut lengths—for aircraft, missile, or other equivalent surface inspection requirements on two sides—add 15 per cent to the cut length sheet price after all extras, except those for packaging and marking, have been applied.

Pump shaft quality: Material will conform to these properties (unless otherwise specified) at an extra of 2.75 cents a pound: Diameter tolerance—12 standard; mechanical properties-ultimate strength, 100,000 to 120,000 psi.; Rockwell C hardness, about 15/23; Brinell hardness, about 207/245; straightness, subject to agreement between buyer and seller. (Where material requires closer diameter tolerance and/or mechanical properties other than those specified above refer to applicable extras.)

Ultrasonic inspection extra: Add 15 per cent of the net mill price (less packaging extra and/or marking extra) for each item subject to ultrasonic testing and rejection by customer for significant sonic indications or loss of back reflection.

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In Alloys • Stainless • Carbon • Bronze

Sharp eyes, made sharper by scientific instruments, verify microscopic details of thread accuracy at Erie Bolt & Nut Company. This is but one proof of the painstaking craftsmanship your own fastener specifications receive from the hands of Erie specialists. Fasteners to resist corrosion, extremes in temperature and tensile stresses to your specifications have been our exclusive job for almost half a century.
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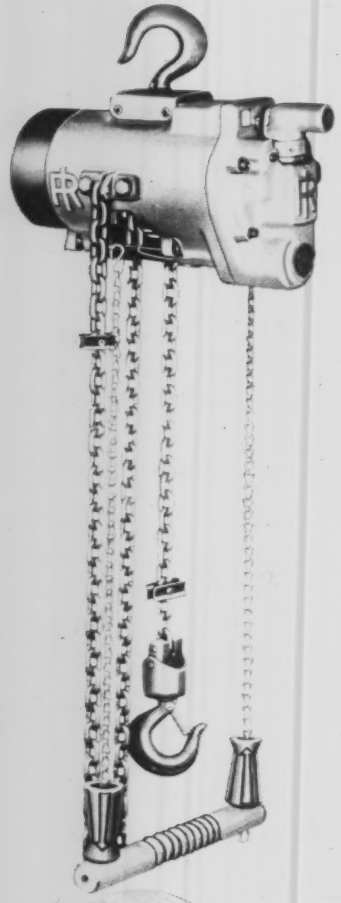
HOISTS



Unequalled for tough jobs, these hoists are unaffected by hot, corrosive, or wet atmospheres and are explosion and shock proof.

They are available in two capacities. The ½-ton size weighs only 39 lbs., and the 1-ton size weighs only 55 lbs. Fully-loaded lifting speeds are 40 fpm and 20 fpm respectively, and both units are available with either link or roller chain.

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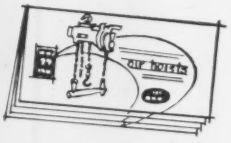
Send for free copy of new Lightweight Air Hoist Bulletin Form 5224.



Ingersoll-Rand

Tools plus AIRengineering increase output per man

8-752

Imported Steel Prices Off

Prices on several steel products from Europe are lower. There is less demand abroad, so European producers are making tonnage offerings here and in other world markets at more attractive prices.

Quotations are off on deformed bars, bar size and structural angles, basic-bessemer plates, furring channels, barbed wire, merchant bars, and nails. I-beams and channels are higher. All other major items are unchanged.

I-beams and channels are among the more active items, with deliveries running around six weeks. Deformed bars and wire products are also moving fairly well.

Wire . . .

Wire Prices, Pages 161 & 162

Wiremakers think second quarter sales volume may be double that of the first quarter, but it would not be surprising: The first quarter total was unusually low. Sales of manufacturers wire have been good at times recently, but there isn't enough continuity of demand to represent a pattern.

Manufacturers wire items are being watched closely since users must order ahead because the item must be produced.

Merchant wire products can be ordered from stock and are available for virtually immediate delivery. Demand has been slow, due in some respects to unfavorable weather.

Bookings in the New England area are reported slightly heavier, the seasonal factor being reflected. Over-all tonnage continues disappointing. Consumers' inventories are low, but they continue to order largely for prompt shipments. Few are adding to stocks.

Except for a mild increase in government inquiry, wire rope is moving slowly. Union Wire Rope Corp., Kansas City, Mo., booked 369,000 ft at $152,759 for the Naval Air Material Center, Philadelphia.

E. H. Edwards Co., South San Francisco, Calif., expects its sales of wire rope and other wire products will be up 10 to 12 per cent this year, compared with 1957 volume.

Atlantic Steel Co., Atlanta, reduced its price on low carbon and

medium low carbon drawn wire $4 a ton, effective Mar. 11. It now quotes $7.65 per 100 lb. The price is in line with that quoted by other leading producers.

Tubular Goods . . .

Tubular Goods Prices, Page 163

Oil country tubemakers expect a gradual upswing in sales by the end of April. By that time, customers' inventories are expected to be considerably below those of a year ago. Well starts will be off from last year, so gains in tubular demand after April will probably be only moderate.

Line pipe requirements have virtually dried up since the adverse rate decision in the "Memphis case." One Pittsburgh area mill that had a three-year backlog of orders six months ago has been idle the past couple months and will probably remain idle until mid-April.

Cast iron pipe sales agencies in the Pacific Northwest report an active spring demand is developing. Awards within the next 30 days are expected to result in a large volume of orders. Wenatchee, Everett, and Tacoma are among Washington cities currently in the market for sizable tonnages.

Plates . . .

Plate Prices, Page 159

Some improvement in heavy construction and active demand for ship requirements are bolstering the plate market. Buying, over-all, is little better than it has been in recent weeks.

Current deliveries of sheared plates are easy, around two to three weeks. Strip-plate can be had in a week to ten days.

A leading Pittsburgh producer reports a slight improvement in demand on railroad account, line pipe, and commercial building. The rise in car and line pipe needs is surprising. Those areas of consumption have not been active in the market the past month or so.

"We are now operating at 60 to 65 per cent of our plate capacity," says a Pittsburgh maker. "If line pipe orders were as strong as they were last year, we could operate at 85 per cent. Tightening of the market from re-entry of line pipe fabricators would bring in additional

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ENCLOSED WORM GEAR DRIVE

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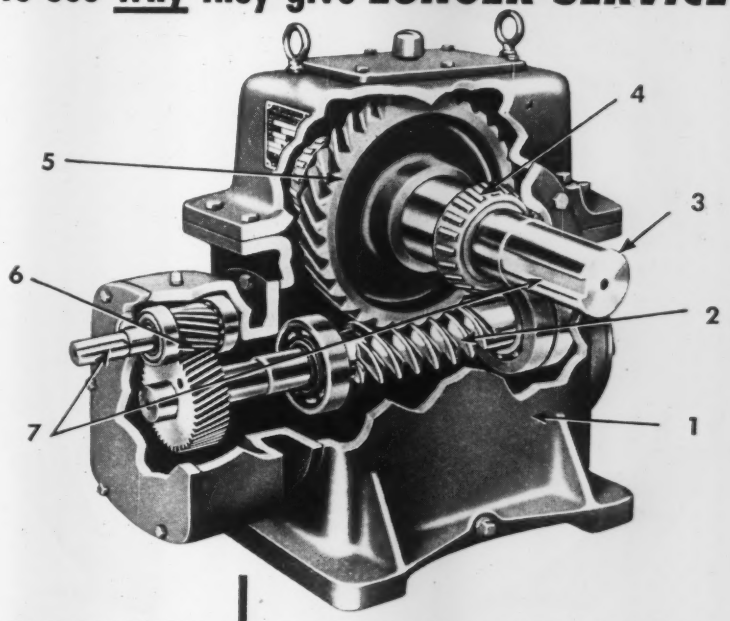

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Provides rigid mounting and alignment of caps and bearings. Made of high quality cast iron.

2 PRECISION ALLOY STEEL WORM
Integral with oversize shaft. Carefully matched to worm gear for quiet, trouble-free service.

3 OVERSIZE OUTPUT SHAFT

4 HEAVY DUTY, EXTRA LARGE BEARINGS
Oversize bearings used throughout unit. Worm bearings are combination single row radial and angular contact ball bearings. Input shaft bearings are single row radial type.

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Precision generated from uniform density, high hardness virgin bronze alloy casting. High load carrying capacity.

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Shaved for full tooth contact. Pinion integral with input shaft. Gear locked in position on worm shaft extension.

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One look at the oversize bearings, larger shafts, precision made gearing and the sturdy housing of a Foote Bros. Hygrade Worm Gear Drive tells you that *this* is a workhorse unit that will stand up and deliver under the toughest conditions.

Notice the carefully balanced design . . . greater mass where it's needed . . . the elimination of weight when it contributes nothing to efficiency . . . strength and toughness at the right places . . . the correct gear alloys . . . the compact design, and above all, the simplicity and ruggedness of this unit.

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HERESITE

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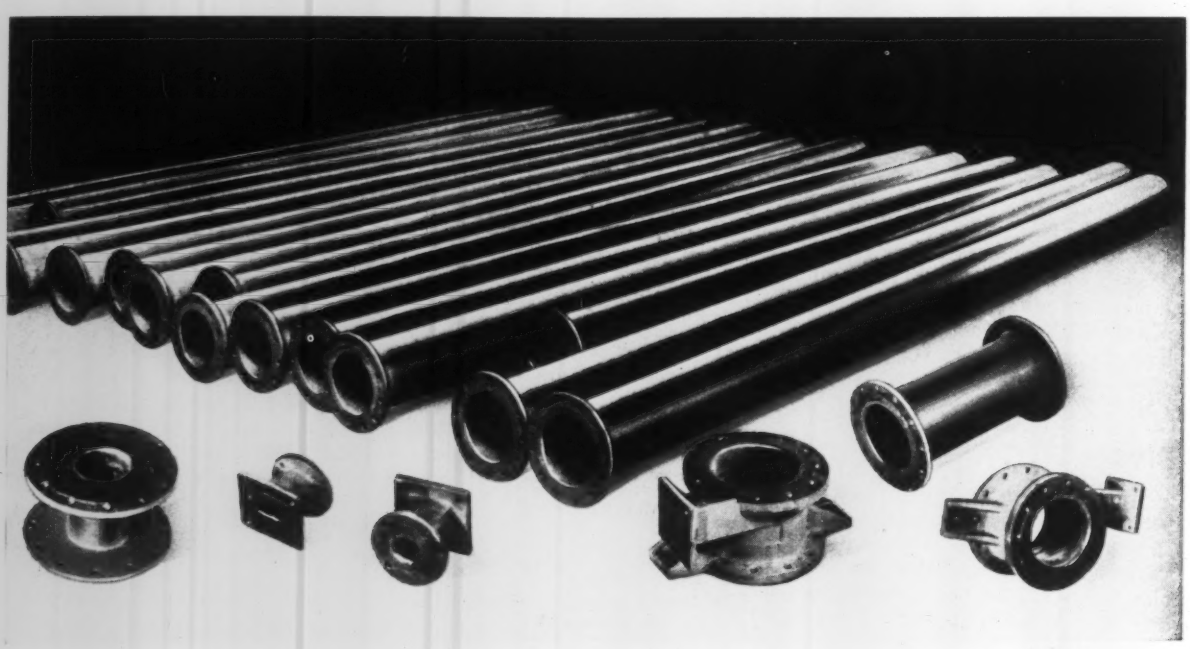
COATED PIPE LINES AND FITTINGS PROTECT YOUR PRODUCTS



Many industries rely on HERESITE pure phenol-formaldehyde resin lining in pipe and pipe fittings to control corrosion and commodity contamination.

Since 1942 the oil industry has used millions of feet of pipe which were lined with HERESITE to reduce corrosion fatigue.

HERESITE & CHEMICAL COMPANY

MAIN OFFICE & PLANT—MANITOWOC, WISCONSIN

EASTERN DIVISION—GARWOOD, NEW JERSEY

plate buyers."

Seasonal gains in construction will bring a moderate upswing in plate needs, but buyers can obtain all sizes easily—and usually as quickly as required.

Lukens Steel Co. has come up with a new concept in plate merchandising — providing a single source of supply for plate and the welding electrodes used in plate fabrication. Beginning July 1, the company will accept orders through its Chicago and Coatesville, Pa., sales offices for a complete range of alloy and mild steel electrodes made to Lukens' specifications and suited to the entire range of alloy, alloy-clad, and carbon steel plates produced by the company.

Structural Shapes . . .

Structural Shape Prices, Page 159

Excess supplies of structural steel, increased fabricating capacity, and sluggish demand are intensifying competition among fabricators. On many jobs, the number of bidders is double that a year ago, and deliveries are markedly shorter.

Most 2000-ton projects are reported ready for erection within five months. Many 500-ton and under jobs take only two to four months. What's happened? Delivery time has been about halved with backlogs correspondingly lower.

More fabricators are dropping escalator clauses in contracts. In New England, where inquiry for light structurals for schools is active, prices for fabricated steel are down $50 to $75 a ton from the peak.

Active inquiry is restricted in the New York area, but considerable work is in the discussion stage. Generally, the trade feels an uptrend in inquiry will be more pronounced from now on. Not much industrial work is in sight, but an expanding volume of public work is in prospect.

Featuring the eastern market is the award of 5000 tons for alterations and repairs to the Delair Bridge of the Pennsylvania Railroad over the Delaware River. The largest active project in the area at present involves 4900 tons of state roadwork in Bronx, N. Y. Other leading inquiry includes 2390 tons for Pennsylvania state bridge work in Perry and Dauphin Counties.

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✓ Maintain positive contact as fuses alternately heat and cool. Fuses are held tight even where vibration is present or during short circuit surges.

✓ Fuse clip jaws use pure copper for current-carrying parts and spring steel for pressure. They reduce heating 80% over commercial type clip.

✓ No clamps or screws to tighten — or to forget to tighten.

The men who pull the switches will tell you what can happen when a switch, *believed* to be open — *isn't*. A lot of things can happen — and every one of them is bad. Personnel safety is in jeopardy. Motors can single-phase. Machinery and work can be damaged. Down-time can skyrocket.

Doesn't it make sense to insist on **V**isible Blade construction which gives you a road block against any of those possibilities? Doesn't it make equally good sense to insist on the safety switch which gives you that construction — plus a lot of other performance advantages?

EC&M HEAVY INDUSTRY ELECTRICAL EQUIPMENT... NOW A PART OF THE SQUARE D LINE

SQUARE D COMPANY

Warehouse . . .

Warehouse Prices, Page 164

Some warehouses note a bulge in orders, but others report they are still at about the February level. Over-all, it looks as though the market is still drifting, with demand pressure only slightly stronger than it has been in recent weeks.

Eastern sellers say March volume may not be as heavy as February's, and they see no early improvement in prospect. At Pittsburgh, though, several distributors report a seasonal upswing in sales, notably in galvanized sheets and wire products. St. Louis district warehouses say over-all demand is holding steady at February's level, which was a trifle above January's.

There is no strong pressure for any product, but if any lines are moving better than others, they are plates and shapes. Inventories are substantial.

Foreign competition continues severe in wire products. The movement of cold-rolled sheets is depressed by lack of heavy automotive buying. Stainless steel plates are moving well, but other stainless products are in slow demand.

Pig Iron . . .

Pig Iron Prices, Page 164

Much of the current business in merchant pig iron is of the truckload variety—small lots for quick shipment. Volume shows no improvement, and prospects for an early pickup in buying are not encouraging. Despite reduced output, supply still exceeds demand.

In the East, merchant sales have reached their lowest ebb in recent years.

Lagging iron demand is partly explained by a fairly active movement of the cast grades of scrap to the foundry trade. The foundries, operating at reduced levels, have been showing a strong preference for cast scrap (vs. iron) because of the more favorable price quoted.

But the price of cast scrap is getting to the point where the differential under pig iron is less attractive. It may mean an early switch to pig iron.

Alan Wood Steel Co., Conshohocken, Pa., plans to close down one of its two blast furnaces in the next week or so.

Steel Shipments by Consuming Markets—January, 1958

(Net tons; all grades)

Classifications	1958 January	% of Total	1957 January	% of Total
Converting & processing	230,102	4.7	325,765	4.4
Forgings (other than auto)	62,991	1.3	114,248	1.5
Bolts, nuts, rivets, etc.	74,008	1.5	132,248	1.8
Warehouses:				
Oil and gas	116,913	2.4	225,681	3.0
All other	704,875	14.2	1,254,296	16.8
Total warehouse	821,788	16.6	1,479,977	19.8
Construction:				
Rail transporation	3,749	0.1	5,131	0.1
Oil and gas	158,520	3.2	288,460	3.8
All other	584,452	11.8	739,364	9.9
Total construction	746,721	15.1	1,032,955	13.8
Contractors' products	252,261	5.1	328,107	4.4
Automotive:				
Passenger cars, etc.	959,884	19.4	1,469,307	19.7
Forgings	25,901	0.5	34,573	0.4
Total automotive	985,785	19.9	1,503,880	20.1
Rail transportation:				
Rails, trackwork, etc.	69,921	1.4	161,349	2.2
Cars, locomotives	107,910	2.2	252,287	3.4
Street railways, etc.	838	..	3,120	..
Total transportation	178,669	3.6	416,756	5.6
Shipbuilding, etc.	95,959	1.9	93,454	1.3
Aircraft	4,599	0.1	12,012	0.2
Oil and gas drilling	39,823	0.8	75,662	1.0
Mining, quarrying, etc.	14,290	0.3	28,806	0.4
Agricultural:				
Machinery	83,049	1.7	85,489	1.1
All other	12,590	0.2	15,386	0.2
Total agricultural	95,639	1.9	100,875	1.3
Machinery, tools, etc.	289,220	5.8	466,629	6.3
Elec. machinery, equipment	147,057	3.0	219,437	2.9
Appliances, utensils, etc.	130,101	2.6	171,884	2.3
Other equipment	134,610	2.7	183,548	2.5
Containers:				
Cans and closures	484,156	9.8	512,675	6.9
Barrels, drums, etc.	55,079	1.1	84,708	1.1
All other	35,182	0.7	59,995	0.8
Total containers	574,417	11.6	657,378	8.8
Ordnance, other military	15,465	0.3	37,324	0.5
Nonreported shipments	57,917	1.2	80,311	1.1
Total domestic shipments	4,951,422	100.0	7,461,256	100.0
Exports	263,995	..	348,195	..
Total shipments	5,215,417	..	7,809,451	..

Data from the American Iron & Steel Institute.

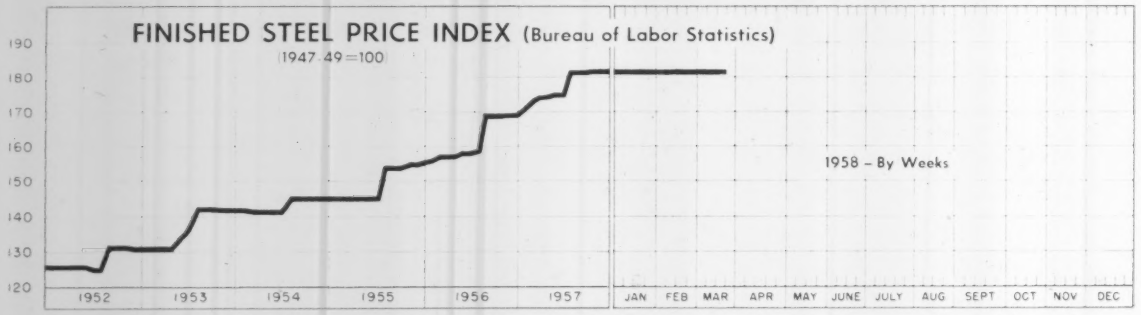
Steel Product Shipments—January, 1958

(Net tons; all grades)

Steel Products	Carbon	Alloy	Stainless	JANUARY TOTALS 1958	1957
Ingots	11,842	10,804	1,576	24,222	44,558
Blooms, slabs, etc.	82,935	27,479	1,209	111,623	205,179
Tube rounds	372	1,646	.....	2,018	7,747
Skelp	5,535	.....	.....	5,535	25,556
Wire rods	61,084	1,244	326	62,654	97,088
Structurals (heavy)	445,548	3,563	4	449,115	531,278
Steel piling	35,292	.....	.....	35,292	41,302
Plates	486,736	34,569	2,378	523,683	776,914
Rails (standard)	55,172	.....	.....	55,172	124,765
Rails (all other)	3,116	.....	.....	3,116	7,804
Joint bars	2,014	.....	.....	2,014	6,138
Tie plates	8,981	.....	.....	8,981	29,906
Track spikes	3,617	.....	.....	3,617	5,434
Wheels	21,834	73	.....	21,907	31,959
Axles	14,296	9	.....	14,305	17,569
Bars (hot rolled)	359,871	105,678	2,755	468,304	801,798
Bars (reinforcing)	118,203	.....	.....	118,203	224,350
Bars (cold drawn)	72,459	13,108	3,594	89,161	144,299
Tool steel	799	5,750	.....	6,549	9,457
Standard pipe	167,539	21	1	167,561	275,291
Oil country goods	123,589	24,011	.....	147,600	271,293
Line pipe	228,453	1	.....	228,454	361,455
Mechanical tubing	31,922	16,289	188	48,399	89,452
Pressure tubing	17,810	4,043	1,304	23,157	41,982
Drawn wire	176,719	3,414	1,727	181,860	242,726
Nails & staples	32,194	.....	2	32,196	41,825
Barbed wire	4,373	.....	.....	4,373	5,718
Woven wire fence	14,568	.....	.....	14,568	20,572
Bale ties & baling wire	1,479	.....	.....	1,479	2,924
Black plate	53,242	.....	.....	53,242	68,385
Tin plate (HD)	31,455	.....	.....	31,455	88,174
Tin plate (electro)	474,359	.....	.....	474,359	492,502
Sheets (hot rolled)	486,131	21,006	3,423	510,560	846,779
Sheets (cold rolled)	861,654	3,117	8,565	873,336	1,232,202
Sheets (galvanized)	186,649	.....	.....	186,649	235,902
Sheets (other coated)	16,499	.....	.....	16,499	17,986
Elec. sheets—strip	7,110	31,199	.....	38,309	66,493
Strip (hot rolled)	80,710	1,423	654	82,787	151,627
Strip (cold rolled)	77,357	1,897	13,849	93,103	123,062
Total shipments (1958)	4,863,518	310,344	41,555	5,215,417	.....
Total shipments (1957)	7,262,356	481,753	65,342	.....	7,809,451

Data from the American Iron & Steel Institute.

Price Indexes and Composites



Mar. 18, 1958	Week Ago	Month Ago	Feb. Avg.	Year Ago
181.7	181.7	181.8	181.8	174.0

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended Mar. 18

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, Standard No. 1	$5.600	Bars, Reinforcing	6.210
Rails, Light, 40 lb	7.067	Bars, C.F., Carbon	10.360
Tie Plates	6.600	Bars, C.F., Alloy	13.875
Axles, Railway	9.825	Bars, C.F., Stainless, 302 (lb)	0.553
Wheels, Freight Car, 33 in. (per wheel)	60.000	Sheets, H.R., Carbon	6.192
Plates, Carbon	6.150	Sheets, C.R., Carbon	7.089
Structural Shapes	5.942	Sheets, Galvanized	8.270
Bars, Tool Steel, Carbon (lb)	0.535	Sheets, C.R., Stainless, 302 (lb)	0.688
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.650	Sheets, Electrical	12.025
Bars, Tool Steel, H.R., Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.60 (lb)	1.355	Strip, C.R., Carbon	9.243
Bars, Tool Steel, H.R., Alloy, High Speed, W18, Cr 4, V 1 (lb)	1.850	Strip, C.R., Stainless, 430 (lb)	0.492
Bars, H.R., Alloy	10.525	Strip, H.R., Carbon	6.095
Bars, H.R., Stainless, 303 (lb)	0.525	Pipe, Black, Buttweld (100 ft)	19.814
Bars, H.R., Carbon	6.425	Pipe, Galv., Buttweld (100 ft)	23.264
		Pipe, Line (100 ft)	199.023
		Casing, Oil Well, Carbon (100 ft)	194.499
		Casing, Oil Well, Alloy (100 ft)	304.610
		Tubes, Boiler (100 ft)	49.130
		Tubing, Mechanical, Carbon (100 ft)	24.953
		Tubing, Mechanical, Stainless, 304 (100 ft)	205.608
		Tin Plate, Hot-dipped, 1.25 lb (95 lb base box)	9.783
		Tin Plate, Electrolytic, 0.25 lb (95 lb base box)	8.483
		Black Plate, Canmaking Quality (95 lb base box)	7.583
		Wire, Drawn, Carbon	10.225
		Wire, Drawn, Stainless, 430 (lb)	0.653
		Bale Ties (bundles)	7.967
		Nails, Wire, 8d Common	9.828
		Wire, Barbed (80-rod spool)	8.719
		Woven Wire Fence (20-rod roll)	21.737

STEEL's FINISHED STEEL PRICE INDEX*

	Mar. 19 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Index (1935-39 avg=100)	239.15	239.15	239.15	227.41	181.31
Index in cents per lb	6.479	6.479	6.479	6.161	4.912

STEEL's ARITHMETICAL PRICE COMPOSITES*

Finished Steel, NT	$145.42	$145.42	$145.42	$139.51	$110.98
No. 2 Fdry Pig Iron, GT	66.49	66.49	66.49	64.56	55.04
Basic Pig Iron, GT	65.99	65.99	65.99	64.11	54.66
Malleable Pig Iron, GT	67.27	67.27	67.27	65.63	55.77
Steelmaking Scrap, GT	36.33	36.83	37.17	48.83	44.17

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL	Mar. 19 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bars, H.R., Pittsburgh	5.425	5.425	5.425	5.075	3.95
Bars, H.R., Chicago	5.425	5.425	5.425	5.075	3.95
Bars, H.R., deld., Philadelphia	5.725	5.725	5.725	5.365	4.502
Bars, C. F., Pittsburgh	7.30*	7.30*	7.30*	6.85*	4.925
Shapes, Std., Pittsburgh	5.275	5.275	5.275	5.00	3.85
Shapes, Std., Chicago	5.275	5.275	5.275	5.00	3.85
Shapes, deld., Philadelphia	5.545	5.545	5.545	5.31	4.13
Plates, Pittsburgh	5.10	5.10	5.10	4.85	3.90
Plates, Chicago	5.10	5.10	5.10	4.85	3.90
Plates, Coatesville, Pa.	5.10	5.10	5.10	5.25	4.35
Plates, Sparrows Point, Md.	5.10	5.10	5.10	4.85	3.90
Plates, Claymont, Del.	5.10	5.10	5.10	5.70	4.35
Sheets, H.R., Pittsburgh	4.925	4.925	4.925	4.675	3.775
Sheets, H.R., Chicago	4.925	4.925	4.925	4.675	3.775
Sheets, C.R., Pittsburgh	6.05	6.05	6.05	5.75	4.575
Sheets, C.R., Chicago	6.05	6.05	6.05	5.75	4.575
Sheets, C.R., Detroit	6.05-6.15	6.05-6.15	6.05-6.15	5.75-5.85	4.775
Sheets, Galv., Pittsburgh	6.60	6.60	6.60	6.30	5.075
Strip, H.R., Pittsburgh	4.925	4.925	4.925	4.675	3.975-4.225
Strip, H.R., Chicago	4.925	4.925	4.925	4.675	3.725
Strip, C.R., Pittsburgh	7.15	7.15	7.15	6.85	5.10-5.80
Strip, C.R., Chicago	7.15	7.15	7.15	6.85	5.35
Strip, C.R., Detroit	7.25	7.25	7.25	6.95	5.30-6.05
Wire, Basic, Pittsburgh	7.65	7.65	7.65	7.20	5.225-5.475
Nails, Wire, Pittsburgh	8.95	8.95	8.95	8.49	6.35
Tin plate (1.50 lb) box, Pitts.	$10.30	$10.30	$10.30	$9.95	$8.95

*Including 0.35c for special quality.

SEMIFINISHED STEEL					
Billets, forging, Pitts. (NT)	$96.00	$96.00	$96.00	$91.50	$70.50
Wire rods, 7/32-5/8" Pitts.	6.15	6.15	6.15	5.80	4.425

PIG IRON, Gross Ton	Mar. 19 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bessemer, Pitts.	$67.00	$67.00	$67.00	$65.50	$55.50
Basic, Valley	66.00	66.00	66.00	64.50	54.50
Basic, deld., Phila.	70.41	70.41	70.41	68.38	59.25
No. 2 Fdry, Neville Island, Pa.	66.50	66.50	66.50	65.00	55.00
No. 2 Fdry, Chicago	66.50	66.50	66.50	65.00	55.00
No. 2 Fdry, deld., Phila.	70.91	70.91	70.91	68.88	59.75
No. 2 Fdry, Birm.	62.50	62.50	62.50	59.00	51.38
No. 2 Fdry (Birm.) deld. Cin.	70.20	70.20	70.20	66.70	58.93
Malleable, Valley	66.50	66.50	66.50	65.00	55.00
Malleable, Chicago	66.50	66.50	66.50	65.00	55.00
Ferromanganese, Duquesne	245.00†	245.00†	245.00†	255.00†	228.00*

†74-76% Mn, net ton. *75-82% Mn, gross ton, Etna, Pa.

SCRAP, Gross Ton (Including broker's commission)					
No. 1 Heavy Melt, Pittsburgh	$36.50	$36.50	$34.50	$48.50	$44.00
No. 1 Heavy Melt, E. Pa.	38.50	38.50	38.50	53.00	46.00
No. 1 Heavy Melt, Chicago	34.00	35.50	38.50	45.00	42.50
No. 1 Heavy Melt, Valley	37.50	37.50	37.50	46.50	44.25
No. 1 Heavy Melt, Cleve.	33.50	33.50	33.50	43.50	44.25
No. 1 Heavy Melt, Buffalo	28.50	28.50	28.50	48.50	43.50
Rails, Rerolling, Chicago	54.50	55.50	54.50	59.50	56.00
No. 1 Cast, Chicago	41.50	41.50	41.50	42.50	43.00

COKE, Net Ton					
Beehive, Furn., Connlsvl.	$15.25	$15.25	$15.25	$15.25	$14.75
Beehive, Fdry., Connlsvl.	18.25	18.25	18.25	18.00	17.00

Steel Prices

Mill prices as reported to STEEL, Mar. 19, cents per pound except as otherwise noted. *Changes shown in italics.* Code numbers following mill points indicate producing company. Key to producers, page 160; to footnotes, page 162.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)

Munhall, Pa. U5 ..... $73.50

INGOTS, Alloy (NT)

Detroit S41 ..... $77.00
Farrell, Pa. S3 ..... 77.00
Lowellville, O. S3 ..... 77.00
Midland, Pa. C18 ..... 77.00
Munhall, Pa. U5 ..... 77.00
Sharon, Pa. S3 ..... 77.00

BILLETS, BLOOMS & SLABS

Carbon, Rerolling (NT)

Bessemer, Pa. U5 ..... $77.50
Buffalo R2 ..... 77.50
Clairton, Pa. U5 ..... 77.50
Ensley, Ala. T2 ..... 77.50
Fairfield, Ala. T2 ..... 77.50
Fontana, Calif. K1 ..... 88.00
Gary, Ind. U5 ..... 77.50
Johnstown, Pa. B3 ..... 77.50
Lackawanna, N.Y. B2 ..... 77.50
Munhall, Pa. U5 ..... 77.50
Owensboro, Ky. G8 ..... 77.50
S. Chicago, Ill. R2, U5 ..... 77.50
S. Duquesne, Pa. U5 ..... 77.50
Sterling, Ill. N15 ..... 77.50
Youngstown R2 ..... 77.50

Carbon, Forging (NT)

Bessemer, Pa. U5 ..... $96.00
Buffalo R2 ..... 96.00
Canton, O. R2 ..... 98.50
Clairton, Pa. U5 ..... 96.00
Conshohocken, Pa. A3 ..... 101.00
Ensley, Ala. T2 ..... 96.00
Fairfield, Ala. T2 ..... 96.00
Fontana, Calif. K1 ..... 105.50
Gary, Ind. U5 ..... 96.00
Geneva, Utah C11 ..... 96.00
Houston S5 ..... 101.00
Johnstown, Pa. B2 ..... 96.00
Lackawanna, N.Y. B2 ..... 96.00
Los Angeles B3 ..... 105.50
Midland, Pa. C18 ..... 96.00
Munhall, Pa. U5 ..... 96.00
Owensboro, Ky. G8 ..... 96.00
Seattle B3 ..... 109.50
Sharon, Pa. S3 ..... 96.00
S. Chicago R2, U5, W14 ..... 96.00
S. Duquesne, Pa. U5 ..... 96.00
S. San Francisco B3 ..... 105.50
Warren, O. C17 ..... 96.00

Alloy, Forging (NT)

Bethlehem, Pa. B2 ..... $114.00
Bridgeport, Conn. C32 ..... 114.00
Buffalo R2 ..... 114.00
Canton, O. R2, T7 ..... 114.00
Conshohocken, Pa. A3 ..... 121.00
Detroit S41 ..... 114.00
Economy, Pa. B14 ..... 114.00
Farrell, Pa. S3 ..... 114.00
Fontana, Calif. K1 ..... 135.00
Gary, Ind. U5 ..... 114.00
Houston S5 ..... 119.00
Ind. Harbor, Ind. Y1 ..... 114.00
Johnstown, Pa. B2 ..... 114.00
Lackawanna, N.Y. B2 ..... 114.00
Los Angeles B3 ..... 134.00
Lowellville, O. S3 ..... 114.00
Massillon, O. R2 ..... 114.00
Midland, Pa. C18 ..... 114.00
Munhall, Pa. U5 ..... 114.00
Owensboro, Ky. G8 ..... 114.00
Sharon, Pa. S3 ..... 114.00
S. Chicago R2, U5, W14 ..... 114.00
S. Duquesne, Pa. U5 ..... 114.00
Struthers, O. Y1 ..... 114.00
Warren, O. C17 ..... 114.00

ROUNDS, SEAMLESS TUBE (NT)

Buffalo R2 ..... $117.50
Canton, O. R2 ..... 120.00
Cleveland R2 ..... 117.50
Gary, Ind. U5 ..... 117.50
S. Chicago, Ill. R2, W14 ..... 117.50
S. Duquesne, Pa. U5 ..... 117.50
Warren, O. C17 ..... 117.50

SKELP

Aliquippa, Pa. J5 ..... 5.075
Munhall, Pa. U5 ..... 4.875
Pittsburgh J5 ..... 5.075
Warren, O. R2 ..... 4.875
Youngstown R2, U5 ..... 4.875

WIRE RODS

Alabama City, Ala. R2 ..... 6.15
Aliquippa, Pa. J5 ..... 6.15
Alton, Ill. L1 ..... 6.35
Buffalo W12 ..... 6.15
Cleveland A7 ..... 6.15
Donora, Pa. A7 ..... 6.15
Fairfield, Ala. T2 ..... 6.15
Houston S5 ..... 6.40
Indiana Harbor, Ind. Y1 ..... 6.15
Johnstown, Pa. B2 ..... 6.15
Joliet, Ill. A7 ..... 6.15
Kansas City, Mo. S5 ..... 6.40
Kokomo, Ind. C16 ..... 6.25
Los Angeles B3 ..... 6.95
Minnequa, Colo. C10 ..... 6.40
Monessen, Pa. P7 ..... 6.15
N. Tonawanda, N.Y. B11 ..... 6.15
Pittsburg, Calif. C11 ..... 6.95
Portsmouth, O. P12 ..... 6.15
Roebling, N.J. R5 ..... 6.25
S. Chicago, Ill. R2 ..... 6.15
Sparrows Point, Md. B2 ..... 6.25
Sterling, Ill. (1) N15 ..... 6.15
Sterling, Ill. N15 ..... 6.25
Struthers, O. Y1 ..... 6.15
Worcester, Mass. A7 ..... 6.45

STRUCTURALS

Carbon Steel Std. Shapes

Alabama City, Ala. R2 ..... 5.275
Atlanta A11 ..... 5.475
Aliquippa, Pa. J5 ..... 5.275
Bessemer, Ala. T2 ..... 5.275
Bethlehem, Pa. B2 ..... 5.325
Birmingham C15 ..... 5.275
Clairton, Pa. U5 ..... 5.275
Fairfield, Ala. T2 ..... 5.275
Fontana, Calif. K1 ..... 6.075
Gary, Ind. U5 ..... 5.275
Geneva, Utah C11 ..... 5.275
Houston S5 ..... 5.375
Ind. Harbor, Ind. I-2 ..... 5.275
Johnstown, Pa. B2 ..... 5.325
Joliet, Ill. P22 ..... 5.275
Kansas City, Mo. S5 ..... 5.375
Lackawanna, N.Y. B2 ..... 5.325
Los Angeles B3 ..... 5.975
Minnequa, Colo. C10 ..... 5.575
Munhall, Pa. U5 ..... 5.275
Niles, Calif. P1 ..... 5.925
Phoenixville, Pa. P4 ..... 5.325
Portland, Oreg. O4 ..... 6.025
Seattle B3 ..... 6.025
S. Chicago, Ill. U5, W14 ..... 5.275
S. San Francisco B3 ..... 5.925
Sterling, Ill. N15 ..... 5.275
Torrance, Calif. C11 ..... 5.975
Weirton, W. Va. W6 ..... 5.275

Wire Flange

Bethlehem, Pa. B2 ..... 5.325
Clairton, Pa. U5 ..... 5.275
Fontana, Calif. K1 ..... 6.225
Indiana Harbor, Ind. I-2 ..... 5.275
Lackawanna, N.Y. B2 ..... 5.325
Munhall, Pa. U5 ..... 5.275
Phoenixville, Pa. P4 ..... 5.325
S. Chicago, Ill. U5 ..... 5.275

Alloy Std. Shapes

Aliquippa, Pa. J5 ..... 6.55
Clairton, Pa. U5 ..... 6.55
Gary, Ind. U5 ..... 6.55
Houston S5 ..... 6.65
Kansas City, Mo. S5 ..... 6.65
Munhall, Pa. U5 ..... 6.55
S. Chicago, Ill. U5 ..... 6.55

H.S., L.A. Std. Shapes

Aliquippa, Pa. J5 ..... 7.75
Bessemer, Ala. T2 ..... 7.75
Bethlehem, Pa. B2 ..... 7.80
Clairton, Pa. U5 ..... 7.75
Fairfield, Ala. T2 ..... 7.75
Fontana, Calif. K1 ..... 8.55
Gary, Ind. U5 ..... 7.75
Geneva, Utah C11 ..... 7.75
Houston S5 ..... 7.85
Ind. Harbor, Ind. I-2, Y1 ..... 7.75
Johnstown, Pa. B2 ..... 7.80
Kansas City, Mo. S5 ..... 7.85
Lackawanna, N.Y. B2 ..... 7.80
Los Angeles B3 ..... 8.45
Munhall, Pa. U5 ..... 7.75
Seattle B3 ..... 8.50
S. Chicago, Ill. U5, W14 ..... 7.75
S. San Francisco B3 ..... 8.40
Struthers, O. Y1 ..... 7.75

H.S., L. A. Wide Flange

Bethlehem, Pa. B2 ..... 7.80
Lackawanna, N.Y. B2 ..... 7.80
Munhall, Pa. U5 ..... 7.75
S. Chicago, Ill. U5 ..... 7.75

PILING

BEARING PILES

Bethlehem, Pa. B2 ..... 5.325
Lackawanna, N.Y. B2 ..... 5.325
Munhall, Pa. U5 ..... 5.275
S. Chicago, Ill. U5 ..... 5.275

STEEL SHEET PILING

Lackawanna, N.Y. B2 ..... 6.225
Munhall, Pa. U5 ..... 6.225
S. Chicago, Ill. U5 ..... 6.225
Weirton, W. Va. W6 ..... 6.225

PLATES

PLATES, Carbon Steel

Alabama City, Ala. R2 ..... 5.10
Aliquippa, Pa. J5 ..... 5.10
Ashland, Ky. (15) A10 ..... 5.10
Atlanta A11 ..... 5.30
Bessemer, Ala. T2 ..... 5.10
Clairton, Pa. U5 ..... 5.10
Claymont, Del. C22 ..... 5.10
Cleveland J5, R2 ..... 5.20
Coatesville, Pa. L7 ..... 5.10
Conshohocken, Pa. A3 ..... 5.20
Ecorse, Mich. G5 ..... 5.20
Fairfield, Ala T2 ..... 5.10
Fontana, Calif. (30) K1 ..... 5.90
Gary, Ind. U5 ..... 5.10
Geneva, Utah C11 ..... 5.10
Granite City, Ill. G4 ..... 5.30
Harrisburg, Pa. P4 ..... 5.10
Houston S5 ..... 5.20
Ind. Harbor, Ind. I-2, Y1 ..... 5.10
Johnstown, Pa. B2 ..... 5.10
Lackawanna, N. Y. B2 ..... 5.10
Lone Star, Tex. L6 ..... 5.20
Mansfield, O. E6 ..... 5.10
Minnequa, Colo. C10 ..... 5.95
Munhall, Pa. U5 ..... 5.10
Newport, Ky. A2 ..... 5.10
Pittsburgh J5 ..... 5.10
Riverdale, Ill. A1 ..... 5.10
Seattle B3 ..... 6.00
Sharon, Pa. S3 ..... 5.10
S. Chicago, Ill. U5, W14 ..... 5.10
Sparrows Point, Md. B2 ..... 5.10
Sterling, Ill. N15 ..... 5.10
Steubenville, O. W10 ..... 5.10
Warren, O. R2 ..... 5.10
Youngstown U5, Y1 ..... 5.10

PLATES, Carbon Abras. Resist.

Claymont, Del. C22 ..... 6.75
Fontana, Calif. K1 ..... 7.55
Geneva, Utah C11 ..... 6.75
Houston S5 ..... 6.85
Johnstown, Pa. B2 ..... 6.75
Sparrows Point, Md. B2 ..... 6.75

PLATES, Wrought Iron

Economy, Pa. B14 ..... 13.15

PLATES, H.S., L.A.

Aliquippa, Pa. J5 ..... 7.625
Bessemer, Ala. T2 ..... 7.625
Clairton, Pa. U5 ..... 7.625
Claymont, Del. C22 ..... 7.675
Cleveland J5, R2 ..... 7.625
Coatesville, Pa. L7 ..... 7.925
Conshohocken, Pa. A3 ..... 7.625
Economy, Pa. B14 ..... 7.625
Ecorse, Mich. G5 ..... 7.725
Fairfield, Ala. T2 ..... 7.625
Farrell, Pa. S3 ..... 7.625
Fontana, Calif. (30) K1 ..... 8.425
Gary, Ind. U5 ..... 7.625
Geneva, Utah C11 ..... 7.625
Houston S5 ..... 7.725
Ind. Harbor, Ind. I-2, Y1 ..... 7.625
Johnstown, Pa. B2 ..... 7.625
Munhall, Pa. U5 ..... 7.625
Pittsburgh J5 ..... 7.625
Seattle B3 ..... 8.525
Sharon, Pa. S3 ..... 7.625
S. Chicago, Ill. U5, W14 ..... 7.625
Sparrows Point, Md. B2 ..... 7.625
Warren, O. R2 ..... 7.625
Youngstown U5 ..... 7.625

PLATES, ALLOY

Aliquippa, Pa. J5 ..... 7.20
Claymont, Del. C22 ..... 7.20
Coatesville, Pa. L7 ..... 7.20
Economy, Pa. B14 ..... 7.20
Fontana, Calif. K1 ..... 8.00
Gary, Ind. U5 ..... 7.20
Houston S5 ..... 7.30
Ind. Harbor, Ind. Y1 ..... 7.20
Johnstown, Pa. B2 ..... 7.20
Lowellville, O. S3 ..... 7.20
Munhall, Pa. U5 ..... 7.20
Newport, Ky. A2 ..... 7.20
Pittsburgh J5 ..... 7.20
Seattle B3 ..... 8.10
Sharon, Pa. S3 ..... 7.20
S. Chicago, Ill. U5, W14 ..... 7.20
Sparrows Point, Md. B2 ..... 7.20
Youngstown Y1 ..... 7.20

FLOOR PLATES

Cleveland J5 ..... 6.175
Conshohocken, Pa. A3 ..... 6.175
Ind. Harbor, Ind. I-2 ..... 6.175
Munhall, Pa. U5 ..... 6.175
S. Chicago, Ill. U5 ..... 6.175

PLATES, Ingot Iron

Ashland c.l. (15) A10 ..... 5.35
Ashland l.c.l (15) A10 ..... 5.85
Cleveland c.l. R2 ..... 5.85
Warren, O. c.l. R2 ..... 5.85

BARS

BARS, Hot-Rolled Carbon (Merchant Quality)

Ala. City, Ala. (9) R2 ..... 5.425
Aliquippa, Pa. (9) J5 ..... 5.425
Alton, Ill. L1 ..... 5.625
Atlanta (9) A11 ..... 5.625
Bessemer, Ala. (9) T2 ..... 5.425
Birmingham (9) C15 ..... 5.425
Buffalo (9) R2 ..... 5.425
Clairton, Pa. (9) U5 ..... 5.425
Cleveland (9) R2 ..... 5.425
Ecorse, Mich. (9) G5 ..... 5.525
Emeryville, Calif. J7 ..... 6.175
Fairfield, Ala. (9) T2 ..... 5.425
Fairless, Pa. (9) U5 ..... 5.575
Fontana, Calif. (9) K1 ..... 6.125
Gary, Ind. (9) U5 ..... 5.425
Houston (9) S5 ..... 5.675
Ind. Harbor (9) I-2, Y1 ..... 5.425
Johnstown, Pa. (9) B2 ..... 5.425
Joliet, Ill. P22 ..... 5.425
Kansas City, Mo. (9) S5 ..... 5.675
Lackawanna (9) B2 ..... 5.425
Los Angeles (9) B3 ..... 6.125
Midland, Pa. (23) C18 ..... 5.725
Milton, Pa. M18 ..... 5.575
Minnequa, Colo. C10 ..... 5.875
Niles, Calif. P1 ..... 6.125
N. Tonawanda, N.Y. (23) B11 ..... 5.775
Owensboro, Ky. (9) G8 ..... 5.425
Pittsburg, Calif. (9) C11 ..... 6.125
Pittsburgh (9) J5 ..... 5.425
Portland, Oreg. O4 ..... 6.175
Seattle B3, N14 ..... 6.175
S. Ch'c'go (9) R2, U5, W14 ..... 5.425
S. Duquesne, Pa. (9) U5 ..... 5.425
S. San Fran., Calif. (9) B3 ..... 6.175
Sterling, Ill. (1) (9) N15 ..... 5.425
Sterling, Ill. (9) N15 ..... 5.525
Struthers, O. (9) Y1 ..... 5.425
Tonawanda, N.Y. B12 ..... 5.425
Torrance, Calif. (9) C11 ..... 6.125
Youngstown (9) R2, U5 ..... 5.425

BARS, H.R. Leaded Alloy (Including leaded extra)

Warren, O. C17 ..... 7.475

BARS, Hot-Rolled Alloy

Aliquippa, Pa. J5 ..... 6.475
Bethlehem, Pa. B2 ..... 6.475
Bridgeport, Conn. C32 ..... 6.55
Buffalo R2 ..... 6.475
Canton, O. R2, T7 ..... 6.475
Clairton, Pa. U5 ..... 6.475
Detroit S41 ..... 6.475
Economy Pa. B14 ..... 6.475
Ecorse, Mich. G5 ..... 6.575
Fairless, Pa. U5 ..... 6.625
Farrell, Pa. S3 ..... 6.475
Fontana, Calif. K1 ..... 7.525
Gary, Ind. U5 ..... 6.475
Houston S5 ..... 6.725
Ind. Harbor, Ind. I-2, Y1 ..... 6.475
Johnstown, Pa. B2 ..... 6.475
Kansas City, Mo. S5 ..... 6.725
Lackawanna, N.Y. B2 ..... 6.475
Lowellville, O. S3 ..... 6.475
Los Angeles B3 ..... 7.525
Massillon, O. R2 ..... 6.475
Midland, Pa. C18 ..... 6.475
Owensboro, Ky. G8 ..... 6.475
Pittsburgh J5 ..... 6.475
Sharon, Pa. S3 ..... 6.475
S. Chicago R2, U5, W14 ..... 6.475
S. Duquesne, Pa. U5 ..... 6.475
Struthers, O. Y1 ..... 6.475
Warren, O. C17 ..... 6.475
Youngstown U5 ..... 6.475

BARS & SMALL SHAPES, H.R. High-Strength, Low-Alloy

Aliquippa, Pa. J5 ..... 7.925
Bessemer, Ala. T2 ..... 7.925
Bethlehem, Pa. B2 ..... 7.925
Clairton, Pa. U5 ..... 7.925
Cleveland R2 ..... 7.925
Ecorse, Mich. G5 ..... 8.025
Fairfield, Ala. T2 ..... 7.925
Fontana, Calif. K1 ..... 8.625
Gary, Ind. U5 ..... 7.925
Houston S5 ..... 8.175
Ind. Harbor, Ind. Y1 ..... 7.925
Johnstown, Pa. B2 ..... 7.925
Kansas City, Mo. S5 ..... 8.175
Lackawanna, N.Y. B2 ..... 7.925
Los Angeles B3 ..... 8.625
Pittsburgh J5 ..... 7.925
Seattle B3 ..... 8.675
S. Chicago, Ill. U5, W14 ..... 7.925
S. Duquesne, Pa. U5 ..... 7.925
S. San Francisco B3 ..... 8.675
Struthers, O. Y1 ..... 7.925
Youngstown U5 ..... 7.925

BAR SIZE ANGLES; H.R. Carbon

Bethlehem, Pa. (9) B2 ..... 5.575
Houston (9) S5 ..... 5.675
Kansas City, Mo. (9) S5 ..... 5.675
Lackawanna (9) B2 ..... 5.425
Sterling, Ill. N15 ..... 5.525
Sterling, Ill. (1) N15 ..... 5.425
Tonawanda, N.Y. B12 ..... 5.425

BAR SIZE ANGLES; S. Shapes

Aliquippa, Pa. J5 ..... 5.425
Atlanta A11 ..... 5.625
Joliet, Ill. P22 ..... 5.425
Niles, Calif. P1 ..... 6.125
Pittsburgh J5 ..... 5.425
Portland, Oreg. O4 ..... 6.175
San Francisco S7 ..... 6.275
Seattle B3 ..... 6.175

BAR SHAPES, Hot-Rolled Alloy

Aliquippa, Pa. J5 ..... 6.55
Clairton, Pa. U5 ..... 6.55
Gary, Ind. U5 ..... 6.55
Houston S5 ..... 6.80
Kansas City, Mo. S5 ..... 6.80
Pittsburgh J5 ..... 6.55
Youngstown U5 ..... 6.55

BARS, C.F., Leaded Alloy (Including leaded extra)

Ambridge, Pa. W18 ..... 9.925
Beaver Falls, Pa. M12 ..... 9.925
Camden, N.J. P13 ..... 10.10
Chicago W18 ..... 9.925
Cleveland C20 ..... 9.925*
Elyria, O. W8 ..... 9.925
Los Angeles P2, S30 ..... 11.40*
Monaca, Pa. S17 ..... 9.925
Newark, N.J. W18 ..... 10.10
Spring City, Pa. K3 ..... 10.10
Warren, O. C17 ..... 9.925

*Grade A; add 0.50c for Grade B.

BARS, Cold-Finished Carbon

Ambridge, Pa. W18 ..... 7.30
Beaver Falls, Pa. M12, R2 ..... 7.30
Birmingham C15 ..... 7.90
Buffalo B5 ..... 7.35
Camden, N.J. P13 ..... 7.75
Carnegie, Pa. C12 ..... 7.30
Chicago W18 ..... 7.30
Cleveland A7, C20 ..... 7.30
Detroit B5, P17 ..... 7.50
Detroit S41 ..... 7.30
Donora, Pa. A7 ..... 7.30
Elyria, O. W8 ..... 7.30
Franklin Park, Ill. N5 ..... 7.30
Gary, Ind. R2 ..... 7.30
Green Bay, Wis. F7 ..... 7.30
Hammond, Ind. J6, L2 ..... 7.30
Hartford, Conn. R2 ..... 7.80
Harvey, Ill. B5 ..... 7.30
Los Angeles (49) S30 ..... 8.75
Los Angeles P2, R2 ..... 8.75
Mansfield, Mass. B5 ..... 7.85
Massillon, O. R2, R8 ..... 7.30
Midland, Pa. C18 ..... 7.30
Monaca, Pa. S17 ..... 7.30
Newark, N.J. W18 ..... 7.75
New Castle, Pa. (17) B4 ..... 7.30
Pittsburgh J5 ..... 7.30
Plymouth, Mich. P5 ..... 7.55
Putnam, Conn. W18 ..... 7.85
Readville, Mass. C14 ..... 7.85
S. Chicago, Ill. W14 ..... 7.30
Spring City, Pa. K3 ..... 7.75
Struthers, O. Y1 ..... 7.30
Warren, O. C17 ..... 7.30
Willimantic, Conn. J5 ..... 7.80
Waukegan, Ill. A7 ..... 7.30
Youngstown F3, Y1 ..... 7.30

BARS, Cold-Finished Carbon (Turned and Ground)

Cumberland, Md. (5) C19 ..... 6.55

BARS, Cold-Finished Alloy

Ambridge, Pa. W18 ..... 8.775
Beaver Falls, Pa. M12, R2 ..... 8.775
Bethlehem, Pa. B2 ..... 8.775
Bridgeport, Conn. C32 ..... 8.925
Buffalo B5 ..... 8.775
Camden, N.J. P13 ..... 8.95
Canton, O. T7 ..... 8.775
Carnegie, Pa. C12 ..... 8.775
Chicago W18 ..... 8.775
Cleveland A7, C20 ..... 8.775
Detroit B5, P17 ..... 8.975
Detroit S41 ..... 8.775
Donora, Pa. A7 ..... 8.775
Elyria, O. W8 ..... 8.775
Franklin Park, Ill. N5 ..... 8.775
Gary, Ind. R2 ..... 8.775
Green Bay, Wis. F7 ..... 8.775
Hammond, Ind. J5, L2 ..... 8.775
Hartford, Conn. R2 ..... 9.075
Harvey, Ill. B5 ..... 8.775
Lackawanna, N.Y. B2 ..... 8.775
Los Angeles P2, S30 ..... 10.75
Mansfield, Mass. B5 ..... 9.075
Massillon, O. R2, R8 ..... 8.775
Midland, Pa. C18 ..... 8.775
Monaca, Pa. S17 ..... 8.775
Newark, N.J. W18 ..... 8.95
Plymouth, Mich. P5 ..... 8.975
S. Chicago, Ill. W14 ..... 8.775
Spring City, Pa. K3 ..... 8.95
Struthers, O. Y1 ..... 8.775
Warren, O. C17 ..... 8.775
Waukegan, Ill. A7 ..... 8.775
Willimantic, Conn. J5 ..... 9.075
Worcester, Mass. A7 ..... 9.075
Youngstown F3, Y1 ..... 8.775

BARS, Reinforcing (To Fabricators)

AlabamaCity,Ala. R2 ..5.425
Atlanta All 5.425
Birmingham C15 .....5.425
Buffalo R2 .....5.425
Cleveland R2 .....5.425
Ecorse,Mich. G5 .....5.775
Emeryville,Calif. J7 ..6.175
Fairfield,Ala. T2 .....5.425
Fairless,Pa. U5 .....5.575
Fontana,Calif. K1 ....6.125
Ft.Worth,Tex.(4)(26)T4 5.875
Gary,Ind. U5 .....5.425
Houston S5 .....5.675
Ind.Harbor,Ind. I-2, Y1 5.425
Johnstown,Pa. B2 ....5.425
Joliet,Ill. P22 .....5.425
KansasCity,Mo. S5 ...5.675
Kokomo,Ind. C16 .....5.525
Lackawanna,N.Y. B2..5.425
LosAngeles B3 .....6.125
Milton,Pa. M18 .....5.575
Minnequa,Colo. C10 ..5.875
Niles,Calif. P1 .....6.125
Pittsburg,Calif. C11 ..6.125
Pittsburgh J5 .....5.425
Portland,Oreg. O4 ....6.175
SandSprings,Okla. S5 ..5.925
Seattle B3, N14 .....6.175
S.Chicago,Ill. R2 .....5.425
S.Duquesne,Pa. U5 ....5.425
S.SanFrancisco B3 ....6.175
SparrowsPoint,Md. B2 .5.425
Sterling,Ill.(4) N15 ..5.425
Sterling,Ill. N15 .....5.525
Struthers,O. Y1 .....5.425
Tonawanda,N.Y. B12 ..6.00
Torrance,Calif. C11 ..6.125
Youngstown R2, U5 ..5.425

BARS, Reinforcing (Fabricated; to Consumers)

Boston B2, U8 .....7.65
Chicago U8 .....6.91
Cleveland U8 .....6.89
Houston S5 .....7.35
Johnstown,Pa. B2 ....7.08
KansasCity,Mo. S5 ....7.35
Lackawanna,N.Y. B2 ..6.85
Marion,O. P11 .....6.70
Newark,N.J. U8 .....7.55
Philadelphia U8 .....7.38
Pittsburgh J5, U8 .....7.10
SandSprings,Okla. S5 ...7.60
Seattle B3, N14 .....7.70
SparrowsPt.,Md. B2 ....7.08
St.Paul U8 .....7.92
Williamsport,Pa. S19 ..7.00

BARS, Wrought Iron

Economy,Pa.(S.R.)B14 14.45
Economy,Pa.(D.R.)B14 18.00
Economy,(Staybolt)B14 18.45

RAIL STEEL BARS

ChicagoHts.(3) C2, I-2 5.325
ChicagoHts.(4)(44) I-2 5.425
ChicagoHts.(4) C2 ...5.425
Franklin,Pa. (3) F5 ..5.325
Franklin,Pa. (4) F5 ..5.425
JerseyShore,Pa.(3) J8 ..5.30
Marion,O. (3) P11 ....5.325
Tonawanda(3) B12 ..5.325
Tonawanda(4) B12 ....6.00
Williamsport,Pa.(3) S19 5.50

SHEETS

SHEETS, Hot-Rolled Steel (18 Gage and Heavier)

AlabamaCity,Ala. R2 ..4.925
Allenport,Pa. P7 .....4.925
Ashland,Ky.(8) A10 ..4.925
Cleveland J5, R2 .....4.925
Conshohocken,Pa. A3..4.975
Detroit(8) M1 .....5.025
Ecorse,Mich. G5 .....5.025
Fairfield,Ala. T2 .....4.925
Fairless,Pa. U5 .....4.975
Fontana,Calif. K1 ....5.675
Gary,Ind. U5 .....4.925
Geneva,Utah C11 ....5.025
GraniteCity,Ill.(8) G4 .5.125
Ind.Harbor,Ind. I-2, Y1 4.925
Irvin,Pa. U5 .....4.925
Lackawanna,N.Y. B2 ..4.925
Mansfield,O. E6 .....4.925
Munhall,Pa. U5 .....4.925
Newport,Ky.(8) A2 ..4.925
Niles,O. M21, S3 .....4.925
Pittsburg,Calif. C11 ..5.625
Pittsburgh J5 .....4.925
Portsmouth,O. P12 ....4.925
Riverdale,Ill. A1 ....4.925
Sharon,Pa. S3 .....4.925
S.Chicago,Ill. W14 ....4.925
SparrowsPoint,Md. B2 .4.925
Steubenville,O. W10 ..4.925
Warren,O. R2 .....4.925
Weirton,W.Va. W6 ....4.925
Youngstown U5, Y1 ..4.925

SHEETS, H.R.(19) Ga. & Lighter

Niles,O. M21 .....6.05

SHEETS, H.R. Alloy

Gary,Ind. U5 .....8.10
Ind.Harbor,Ind. Y1 ....8.10
Irvin,Pa. U5 .....8.10
Munhall,Pa. U5 .....8.10
Newport,Ky. A2 .....8.10
Youngstown U5, Y1 ...8.10

SHEETS, H.R.(14 Ga. & Heavier) High-Strength, Low-Alloy

Cleveland J5, R2 ....7.275
Conshohocken,Pa. A3 ..7.325
Ecorse,Mich. G5 .....7.375
Fairfield,Ala. T2 .....7.275
Fairless,Pa. U5 .....7.325
Farrell,Pa. S3 .....7.275
Fontana,Calif. K1 ....8.025
Gary,Ind. U5 .....7.275
Ind.Harbor,Ind. I-2, Y1 7.275
Irvin,Pa. U5 .....7.275
Lackawanna (35) B2 ..7.275
Munhall,Pa. U5 .....7.275
Pittsburgh J5 .....7.275
S.Chicago,Ill. U5, W14 7.275
Sharon,Pa. S3 .....7.275
SparrowsPoint(36) B2 .7.275
Warren,O. R2 .....7.275
Weirton,W.Va. W6 ....7.275
Youngstown U5, Y1 ..7.275

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10 ..5.175
Cleveland R2 .....5.675
Warren,O. R2 .....5.675

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 .....6.80
Middletown,O. A10 ....6.55
Warren,O. R2 .....6.80

SHEETS, Cold-Rolled Steel (Commercial Quality)

AlabamaCity,Ala. R2 ..6.05
Allenport,Pa. P7 .....6.05
Cleveland J5, R2 .....6.05
Conshohocken,Pa. A3 ..6.10
Detroit M1 .....6.05
Ecorse,Mich. G5 .....6.15
Fairfield,Ala. T2 .....6.05
Fairless,Pa. U5 .....6.10
Follansbee,W.Va. F4 ..6.05
Fontana,Calif. K1 ....7.30
Gary,Ind. U5 .....6.05
GraniteCity,Ill. G4 ....6.25
Ind.Harbor,Ind. I-2, Y1 6.05
Irvin,Pa. U5 .....6.05
Lackawanna,N.Y. B2 ..6.05
Mansfield,O. E6 .....6.05
Middletown,O. A10 ....6.05
Newport,Ky. A2 .....6.05
Pittsburg,Calif. C11 ....7.00
Pittsburgh J5 .....6.05
Portsmouth,O. P12 ....6.05
SparrowsPoint,Md. B2 ..6.05
Steubenville,O. W10 ....6.05
Warren,O. R2 .....6.05
Weirton,W.Va. W6 ....6.05
Yorkville,O. W10 .....6.05
Youngstown Y1 .....6.05

SHEETS, Cold-Rolled, High-Strength, Low-Alloy

Cleveland J5, R2 ....8.975
Ecorse,Mich. G5 .....9.075
Fairless,Pa. U5 .....9.025
Fontana,Calif. K1 ..10.275
Gary,Ind. U5 .....8.975
IndianaHarbor,Ind. Y1 8.975
Irvin,Pa. U5 .....8.975
Lackawanna(37) B2 ..8.975
Pittsburgh J5 .....8.975
SparrowsPoint (38) B2 8.975
Warren,O. R2 .....8.975
Weirton,W.Va. W6 ....8.975
Youngstown Y1 .....8.975

SHEETS, Culvert

	Cu Steel	Cu Fe
Ashland,Ky. A10	6.95	7.20
Canton,O. R2	6.95	7.45
Fairfield T2	6.95	7.20
Gary,Ind. U5	6.95	7.20
GraniteCity,Ill. G4	7.15	...
Ind.Harbor I-2	6.95	7.20
Irvin,Pa. U5	6.95	7.20
Kokomo,Ind. C16	7.05	...
MartinsFry. W10	6.95	7.20
Pitts.,Calif. C11	7.70	...
Pittsburgh J5	6.95	...
SparrowsPt. B2	6.95	...

SHEETS, Culvert—Pure Iron

Ind.Harbor,Ind. I-2 ...7.20

SHEETS, Galvanized Steel Hot-Dipped

AlabamaCity,Ala. R2 ..6.60‡
Ashland,Ky. A10 .....6.60‡
Canton,O. R2 .....6.60‡
Dover,O. E6 .....6.60‡
Fairfield,Ala. T2 .....6.60‡
Gary,Ind. U5 .....6.60†
GraniteCity,Ill. G4 ....6.80*
Ind.Harbor,Ind. I-2 ....6.60†
Irvin,Pa. U5 .....6.60†
Kokomo,Ind. C16 .....6.70‡
MartinsFerry,O. W10 ...6.60*
Middletown,O. A10 ....6.60†
Pittsburg,Calif. C11....7.35*
Pittsburgh J5 .....6.60†
SparrowsPt.,Md. B2 ...6.60†
Warren,O. R2 .....6.60‡
Weirton,W.Va. W6 ....6.60*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing

Fontana,Calif. K1 ....7.175

SHEETS, Galvanized High-Strength, Low-Alloy

Irvin,Pa. U5 .....9.725
SparrowsPt.(39) B2 ..9.725

SHEETS, Galvannealed Steel

Canton,O. R2 .....7.00
Irvin,Pa. U5 .....7.00

SHEETS, Galvanized Ingot Iron (Hot-Dipped Continuous)

Ashland,Ky. A10 ....6.85
Middletown,O. A10 ....6.85

SHEETS, Electrogalvanized

Cleveland (28) R2 ....7.425
Niles,O. (28) R2 .....7.425
Youngstown J5 .....7.275
Weirton,W.Va. W6 ...7.275

SHEETS, Aluminum Coated

Butler,Pa. A10 (type 1) .9.25
Butler,Pa. A10 (type 2) .9.35

SHEETS, Enameling Iron

Ashland,Ky. A10 ....6.625
Cleveland R2 .....6.625
Fairfield,Ala. T2 .....6.625
Gary,Ind. U5 .....6.625
GraniteCity,Ill. G4 ....6.825
Ind.Harbor,Ind. I-2, Y1 6.625
Irvin,Pa. U5 .....6.625
Middletown,O. A10 ....6.625
Niles,O. M21, S3 ....6.625
Youngstown Y1 .....6.625

BLUED STOCK, 29 Gage

Follansbee,W.Va. F4 ..8.65
Ind.Harbor,Ind. I-2 ..8.475
Yorkville,O. W10 ....8.475

SHEETS, Long Terne Steel (Commercial Quality)

BeechBottom,W.Va.W10 7.00
Gary,Ind. U5 .....7.00
Mansfield,O. E6 .....7.00
Middletown,O. A10 ....7.00
Niles,O. M21, R2, S3 ..7.00
Weirton,W.Va. W6 ....7.00

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ....7.40

Key To Producers

A1 Acme Steel Co.
A2 Acme-Newport Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Div., H. K. Porter Co. Inc.
A6 American Shim Steel Co.
A7 American Steel & Wire Div., U. S. Steel Corp.
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke Wickwire Spencer Steel Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div., Buffalo Eclipse Corp.
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div., H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Plant, Wickwire Spencer Steel Div., Colo. Fuel & Iron
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C32 Carpenter Steel of N.Eng.

D2 Detroit Steel Corp.
D3 Dearborn Div., Sharon Steel Corp.
D4 Disston Div., H. K. Porter Co. Inc.
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas & Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire-Reeves Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimmons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
G8 Green River Steel Corp.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins Steel Tube Works
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M14 McInnes Steel Co.
M16 Md. Fine & Special Wire
M17 Metal Forming Corp.
M18 Milton Steel Div., Merritt-Chapman&Scott
M21 Mallory-Sharon Metals Corp.
M22 Mill Strip Products Co.

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div., U. S. Steel Corp.
N5 Nelsen Steel & Wire Co.
N6 New England High Carbon Wire Co.
N8 Newman-Crosby Steel
N9 Newport Steel Corp.
N14 Northwest. Steel Rolling Mills Inc.
N15 Northwestern S.&W.Co.
N20 Neville Ferroalloy Co.

O1 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co., Sub. of Barium Steel Corp.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Div., Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Corp.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.
P24 Phil. Steel & Wire Corp.

R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R8 Reliance Div., Eaton Mfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Div., Copperweld Steel Co.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Prod.
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.
S40 Seneca Steel Service
S41 Stainless Steel Div., J&L Steel Corp.
S42 Southern Elec. Steel Co.

T2 Tenn. Coal & Iron Div., U. S. Steel Corp.
T3 Tenn. Products & Chemical Corp.
T4 Texas Steel Co.
T5 Thomas Strip Div., Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.
T19 Techalloy Co. Inc.

U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div., U. S. Steel Corp.

V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Steel Div., H. K. Porter Co.

W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W8 Western Automatic Machine Screw Co.
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.

Y1 Youngstown Sheet & Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	4.925
Allenport,Pa. P7	4.925
Alton,Ill. L1	5.125
Ashland,Ky.(8) A10	4.925
Atlanta A11	*4.925*
Bessemer,Ala. T2	4.925
Birmingham C15	4.925
Buffalo(27) R2	4.925
Conshohocken,Pa. A3	4.975
Detroit M1	5.025
Ecorse,Mich. G5	5.025
Fairfield,Ala. T2	4.925
Fontana,Calif. K1	5.675
Gary,Ind. U5	4.925
Ind.Harbor,Ind. I-2, Y1	4.925
Johnstown,Pa.(25) B2	4.925
Lackaw'na,N.Y.(25) B2	4.925
LosAngeles(25) B3	5.675
Minnequa,Colo. C10	6.025
Riverdale,Ill. A1	4.925
SanFrancisco S7	6.35
Seattle(25) B3	5.925
Seattle N14	6.35
Sharon,Pa. S3	4.925
S.Chicago W14	4.925
S.SanFrancisco(25) B3	5.675
SparrowsPoint,Md. B2	4.925
Sterling,Ill.(1) N15	4.925
Sterling,Ill. N15	5.025
Torrance,Calif. C11	5.675
Warren,O. R2	4.925
Weirton,W.Va. W6	4.925
Youngstown U5	4.925

STRIP, Hot-Rolled Alloy

Carnegie,Pa. S18	8.10
Farrell,Pa. S3	8.10
Gary,Ind. U5	8.10
Houston S5	8.35
Ind.Harbor,Ind. Y1	8.10
KansasCity,Mo. S5	8.35
LosAngeles B3	9.30
Lowellville,O. S3	8.10
Newport,Ky. A2	8.10
Sharon,Pa. A2, S3	8.10
S.Chicago,Ill. W14	8.10
Youngstown U5, Y1	8.10

STRIP, Hot-Rolled High-Strength, Low-Alloy

Bessemer,Ala. T2	7.325
Conshohocken,Pa. A3	7.325
Ecorse,Mich. G5	7.425
Fairfield,Ala. T2	7.325
Farrell,Pa. S3	7.325
Gary,Ind. U5	7.325
Ind.Harbor,Ind. I-2, Y1	7.325
Lackawanna,N.Y. B2	7.325
LosAngeles(25) B3	8.075
Seattle(25) B3	8.325
Sharon,Pa. S3	7.325
S.Chicago,Ill. W14	7.325
S.SanFrancisco(25) B3	8.075
SparrowsPoint,Md. B2	7.325
Warren,O. R2	7.325
Weirton,W.Va. W6	7.325
Youngstown U5, Y1	7.325

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	5.175
Warren,O. R2	5.675

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6	7.15
Baltimore T6	7.15
Boston T6	7.70
Buffalo S40	7.15
Cleveland A7, J5	7.15
Conshohocken,Pa. A3	7.20
Dearborn,Mich. D3	7.25
Detroit D2, M1, P20	7.25
Dover,O. G6	7.15
Ecorse,Mich. G5	7.25
Evanston,Ill. M22	7.25
Follansbee,W.Va. F4	7.15
Fontana,Calif. K1	9.00
FranklinPark,Ill. T6	7.25
Ind.Harbor,Ind. Y1	7.15
Indianapolis J5	7.30
LosAngeles J5	9.05
LosAngeles C1	9.20
NewBedford,Mass. R10	7.60
NewBritain(10) S15	7.15
NewCastle,Pa. B4, E5	7.15
NewHaven,Conn. D2	7.60
NewKensington,Pa. A6	7.15
Pawtucket,R.I. B3	7.80
Pawtucket,R.I. N8	7.70
Philadelphia P24	7.70
Pittsburgh J5	7.15
Riverdale,Ill. A1	7.25
Rome,N.Y.(32) R6	7.15
Sharon,Pa. S3	7.15
Trenton,N.J.(31) R5	8.60
Wallingford,Conn. W2	7.60
Warren,O. R2, T5	7.15
Weirton,W.Va. W6	7.15
Worcester,Mass. A7	7.70
Youngstown J5, Y1	7.15

STRIP, Cold-Rolled Alloy

Boston T6	15.40
Carnegie,Pa. S18	15.05
Cleveland A7	15.05
Dover,O. G6	15.05
Farrell,Pa. S3	15.05
FranklinPark,Ill. T6	15.05
Harrison,N.J. C18	15.05
Indianapolis J5	15.20
Lowellville,O. S3	15.05
Pawtucket,R.I. N8	15.40
Riverdale,Ill. A1	15.05
Sharon,Pa. S3	15.05
Worcester,Mass. A7	15.35
Youngstown J5	15.05

STRIP, Cold-Rolled High-Strength, Low-Alloy

Cleveland A7	10.45
Dearborn,Mich. D3	10.60
Dover,O. G6	10.45
Ecorse,Mich. G5	10.60
Farrell,Pa. S3	10.50
Ind.Harbor,Ind. Y1	10.65
Sharon,Pa. S3	10.50
Warren,O. R2	10.45
Weirton,W.Va. W6	10.50
Youngstown Y1	10.65

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	7.90

STRIP, C.R. Electrogalvanized

Cleveland A7	7.15*
Dover,O. G6	7.15*
Evanston,Ill. M22	7.25*
Riverdale,Ill. A1	7.25*
Warren,O. B9, T5	7.15*
Worcester,Mass. A7	7.70*
Youngstown J5	7.15*

*Plus galvanizing extras.

STRIP, Galvanized (Continuous)

Sharon,Pa. S3	7.275

TIGHT COOPERAGE HOOP

Atlanta A11	5.65
Riverdale,Ill. A1	5.50
Sharon,Pa. S3	5.35
Youngstown U5	5.35

STRIP, Cold-Finished Spring Steel (Annealed)

	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	9.50	10.70	12.90	15.90	18.85
Boston T6	9.50	10.70	12.90	15.90	18.85
Bristol,Conn. W1	...	10.70	12.90	16.10	19.30
Carnegie,Pa. S18	8.95	10.40	12.60	15.60	....
Cleveland A7	8.95	10.40	12.60	15.60	18.55
Dearborn,Mich. D3	9.05	10.50	12.70	....	....
Detroit D2	9.05	10.50	12.70	15.70	....
Dover,O. G6	8.95	10.40	12.60	15.60	18.55
Evanston,Ill. M22	8.95	10.40	12.60	15.60	....
Fostoria,O. S1	10.05	10.40	12.60	15.60	....
FranklinPark,Ill. T6	9.05	10.40	12.60	15.60	18.55
Harrison,N.J. C18	....	....	12.90	16.10	19.30
Indianapolis J5	9.10	10.55	12.60	15.60	18.55
LosAngeles C1	11.15	12.60	14.80	17.80	....
LosAngeles J5	11.15	12.60	14.80	....	....
NewBritain,Conn.(10) S15	8.95	10.40	12.60	15.60	18.55
NewCastle,Pa. B4, E5	8.95	10.40	12.60	15.60	....
NewHaven,Conn. D2	9.40	10.70	12.90	15.90	....
NewKensington,Pa. A6	8.95	10.40	12.60	15.60	....
New York W3	...	10.70	12.90	16.10	19.30
Pawtucket,R.I. N8	9.50	10.70	12.90	15.90	18.85
Riverdale,Ill. A1	9.05	10.40	12.60	15.60	18.55
Rome,N.Y.(32) R6	8.95	10.40	12.60	15.60	18.55
Sharon,Pa. S3	8.95	10.40	12.60	15.60	18.55
Trenton,N.J. R5	...	10.70	12.90	16.10	19.30
Wallingford,Conn. W2	9.40	10.70	12.90	15.90	18.75
Warren,O. T5	8.95	10.40	12.60	15.60	18.55
Worcester,Mass. A7, T6	9.50	10.70	12.90	15.90	18.85
Youngstown J5	8.95	10.40	12.60	15.60	18.55

Spring Steel (Tempered)

	Up to 0.80C	0.81-1.05C	1.06-1.35C
Bristol,Conn. W1	18.10	21.95	26.30
Buffalo W12	18.10	....	....
Fostoria,O. S1	18.30	22.15	....
FranklinPark,Ill. T6	18.45	22.30	26.65
Harrison,N.J. C18	18.10	21.95	26.30
New York W3	18.10	21.95	26.30
Palmer,Mass. W12	18.10	....	....
Trenton,N.J. R5	18.10	21.95	26.30
Worcester,Mass. A7, T6	18.10	21.95	26.30
Youngstown J5	18.45	22.30	26.65

SILICON STEEL

H.R. SHEETS(22 Ga., cut lengths)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	....	....	11.80	12.90	13.95
Mansfield,O. E6	9.625	11.10	11.80	12.90	13.95
Newport,Ky. A2	9.625	11.10	11.80	12.90	13.95
Niles,O. M21, S3	9.625	11.10	11.80	12.90	....
Vandergrift,Pa. U5	....	11.10	11.80	12.90	13.95
Warren,O. R2	9.625	11.10	11.80	12.90	....
Zanesville,O. A10	....	11.10	11.80	12.90	13.95

C.R. COILS & CUT LENGTHS (22 Ga.)

Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	....	11.35	12.05	13.15	14.20
Brackenridge,Pa. A4	....	....	12.05	13.15	14.20
GraniteCity,Ill. G4	9.825*	11.05*	11.75*	12.85*	....
IndianaHarbor,Ind. I-2	9.625*	10.85*	11.55*	12.65*	....
Mansfield,O. E6	9.625*	11.35	12.05	13.15	14.20
Vandergrift,Pa. U5	9.625*	11.35	12.05	13.15	14.20
Warren,O. R2	9.625*	11.35	12.05	13.15	14.20
Zanesville,O. A10	....	11.35†	12.05	13.15	14.20
					Stator
Vandergrift,Pa. U5	....	....	....	....	7.85

H.R. SHEETS (22 Ga., cut lengths)	T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	15.00	15.55	16.05	17.10
Vandergrift,Pa. U5	15.00	15.55	16.05	17.10
Zanesville,O. A10	15.00	15.55	16.05	17.10

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-66	T-72
Brackenridge,Pa. A4	....	17.60	19.20	19.70	20.20	15.25††
Butler,Pa. A10	....	....	....	19.20	19.70	20.20
Vandergrift,Pa. U5	16.60	17.60	19.20	19.70	20.20	15.25**
Warren,O. R2	....	....	....	....	....	15.25‡

*Semiprocessed. †Fully processed only. ‡Coils, annealed, semiprocessed ½c lower. **Cut lengths, ¾-cent lower. ††Coils only.

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$8.75	$9.00	$9.40
Fairfield,Ala. T2	8.85	9.10	9.50
Fairless,Pa. U5	8.85	9.10	9.50
Fontana,Calif. K1	9.50	9.75	10.15
Gary,Ind. U5	8.75	9.00	9.40
GraniteCity,Ill. G4	8.85	9.10	9.50
IndianaHarbor,Ind. I-2, Y1	8.75	9.00	9.40
Irvin,Pa. U5	8.75	9.00	9.40
Niles,O. R2	8.75	9.00	9.40
Pittsburg,Calif. C11	9.50	9.75	10.15
SparrowsPoint,Md. B2	8.85	9.10	9.50
Weirton,W.Va. W6	8.75	9.00	9.40
Yorkville,O. W10	8.75	9.00	9.40

ELECTROTIN (22-27 Gage; Dollars per 100 lb)			
Aliquippa,Pa. J5	7.725	7.925	....
Niles,O. R2	7.725	7.925	8.125

TIN PLATE, American	1.25 lb	1.50 lb
Aliquippa,Pa.J5	$10.05	$10.30
Fairfield,Ala. T2	10.15	10.40
Fairless,Pa. U5	10.15	10.40
Fontana,Calif.K1	10.80	11.05
Gary,Ind. U5	10.05	10.30
Ind.Harb. Y1	10.05	10.30
Pitts.,Calif. C11	10.80	11.05
Sp.Pt.,Md. B2	10.15	10.40
Weirton,W.Va.W6	10.05	10.30
Yorkville,O. W10	10.05	10.30

BLACK PLATE (Base Box)	
Aliquippa,Pa. J5	$7.85
Fairfield,Ala. T2	7.95
Fairless,Pa. U5	7.95
Fontana,Calif. K1	8.60
Gary,Ind. U5	7.85
GraniteCity,Ill. G4	7.95
Ind.Harbor,Ind. I-2, Y1	7.85
Irvin,Pa. U5	7.85
Niles,O. R2	7.85
Pittsburg,Calif. C11	8.60
SparrowsPoint,Md. B2	7.85
Weirton,W.Va. W6	7.85
Yorkville,O. W10	7.85

HOLLOWARE ENAMELING Black Plate (29 Gage)	
Aliquippa,Pa. J5	$7.50
Gary,Ind. U5	7.50
GraniteCity,Ill. G4	7.60
Ind.Harbor,Ind. Y1	7.50
Irvin,Pa. U5	7.50
Yorkville,O. W10	7.50

MANUFACTURING TERNES (Special Coated, Base Box)	
Gary,Ind. U5	$9.70
Irvin,Pa. U5	9.70

ROOFING SHORT TERNES (8 lb Coated, Base Box)	
Gary,Ind. U5	$11.25

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	7.65
Aliquippa,Pa. J5	7.65
Alton,Ill. L1	7.85
Atlanta A11	*7.65*
Bartonville,Ill. K4	7.75
Buffalo W12	7.65
Chicago W13	7.65
Cleveland A7, C20	7.65
Crawfordsville,Ind. MS	7.75
Donora,Pa. A7	7.65
Duluth A7	7.65
Fairfield,Ala. T2	7.65
Fostoria,O.(24) S1	7.75
Houston S5	7.90
Jacksonville,Fla. MS	8.00
Johnstown,Pa. B2	7.65
Joliet,Ill. A7	7.65
KansasCity,Mo. S5	7.90
Kokomo,Ind. C16	7.75
LosAngeles B3	8.60
Minnequa,Colo. C10	7.90
Monessen,Pa. P7, P16	7.65
N.Tonawanda,N.Y. B11	7.65
Palmer,Mass. W12	7.95
Pittsburg,Calif. C11	8.60
Portsmouth,O. P12	7.65
Rankin,Pa. A7	7.65
S.Chicago,Ill. R2	7.65
S.SanFrancisco C10	8.60
SparrowsPoint,Md. B2	7.75
Sterling,Ill.(1) N15	7.65
Sterling,Ill. N15	7.75
Struthers,O. Y1	7.65
Waukegan,Ill. A7	7.65
Worcester,Mass. A7	7.95

WIRE, Gal'd ACSR for Cores

Bartonville,Ill. K4	12.65
Buffalo W12	12.65
Cleveland A7	12.65
Donora,Pa. A7	12.65
Duluth A7	12.65
Johnstown,Pa. B2	12.65
Minnequa,Colo. C10	12.775
Monessen,Pa. P7, P16	12.65
Muncie,Ind. I-7	12.85
NewHaven,Conn. A7	12.95
Palmer,Mass. W12	12.95
Pittsburg,Calif. C11	13.45
Portsmouth,O. P12	12.65
Roebling,N.J. R5	12.95
SparrowsPt.,Md. B2	12.75
Struthers,O. Y1	12.65
Trenton,N.J. A7	12.95
Waukegan,Ill. A7	12.65
Worcester,Mass. A7	12.95

WIRE, Upholstery Spring

Aliquippa,Pa. J5	9.30
Alton,Ill. L1	9.50
Buffalo W12	9.30
Cleveland A7	9.30
Donora,Pa. A7	9.30
Duluth A7	9.30
Johnstown,Pa. B2	9.30
KansasCity,Mo. S5	9.55
LosAnbeles B3	10.25
Minnequa,Colo. C10	9.50
Monessen,Pa. P7, P16	9.30
New Haven,Conn. A7	9.60
Palmer,Mass. W12	9.60
Pittsburg,Calif. C11	10.25
Portsmouth,O. P12	9.30
Roebling,N.J. R5	9.60
S.Chicago,Ill. R2	9.30
S.SanFrancisco C10	10.25
SparrowsPt.,Md. B2	9.40
Struthers,O. Y1	9.30
Trenton,N.J. A7	9.60
Waukegan,Ill. A7	9.30
Worcester,Mass. A7, J4, T6	9.60

WIRE, Fine & Weaving(8" Coils)

Alton,Ill. L1	15.80
Bartonville,Ill. K4	15.70
Buffalo W12	15.60
Chicago W13	15.60
Cleveland A7	15.60
Crawfordsville,Ind. MS	15.70
Fostoria,O. S1	15.60
Houston S5	15.85
Jacksonville,Fla. MS	15.95
Johnstown,Pa. B2	15.60
KansasCity,Mo. S5	15.85
Kokomo,Ind. C16	15.60
Minnequa,Colo. C10	15.85
Monessen,Pa. P16	15.60
Muncie,Ind. I-7	15.80
Palmer,Mass. W12	15.90
S.SanFrancisco C10	16.45
Waukegan,Ill. A7	15.60
Worcester,Mass. A7, T6	15.90

ROPE WIRE (A)

Bartonville,Ill. K4	12.75
Buffalo W12	12.75
Fostoria,O. S1	12.75
Johnstown,Pa. B2	12.75
Monessen,Pa. P7	12.75
Muncie,Ind. I-7	12.95
Palmer,Mass. W12	13.05
Portsmouth,O. P12	12.75
Roebling,N.J. R5	13.05
SparrowsPt.,Md. B2	12.85
Struthers,O. Y1	12.75
Worcester,Mass. J4	13.05

(A) Plow and Mild Plow; add 0.25c for Improved Plow

WIRE, Tire Bead

Bartonville,Ill. K4	16.55
Monessen,Pa. P16	16.55
Roebling,N.J. R5	17.05

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	11.65
Baltimore T6	11.95
Boston T6	11.95
Buffalo W12	11.65
Chicago W13	11.75
Cleveland A7	11.65
Crawfordsville,Ind. MS	11.65
Dover,O. G6	11.65
Fostoria,O. S1	11.65
FranklinPark,Ill. T6	11.75
Kokomo,Ind. C16	11.65
Massillon,O. R8	11.65
Milwaukee C23	11.85
Monessen,Pa. P7, P16	11.65
Palmer,Mass. W12	11.95
Pawtucket,R.I. N8	11.95
Philadelphia P24	11.95
Riverdale,Ill. A1	11.75
Rome,N.Y. R6	11.65
Sharon,Pa. S3	11.65
Trenton,N.J. R5	11.95
Warren,O. B9	11.65
Worcester,Mass. A7, T6	11.95

NAILS, Stock	Col.
AlabamaCity,Ala. R2	173
Aliquippa,Pa. J5	173
Atlanta A11	175
Bartonville,Ill. K4	175
Chicago W13	173
Cleveland A9	173
Crawfordsville,Ind. MS	175
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	178
Jacksonville,Fla.(20) MS	184
Johnstown,Pa. B2	173
Joliet,Ill. A7	173
KansasCity,Mo. S5	178
Kokomo,Ind. C16	175
Minnequa,Colo. C10	178
Monessen,Pa. P7	173
Pittsburg,Calif. C11	192
Rankin,Pa. A7	173
S.Chicago,Ill. R2	173
SparrowsPt.,Md. B2	175
Sterling,Ill.(7) N15	175
Worcester,Mass. A7	179

(To Wholesalers; per cwt)

Galveston,Tex. D7	$9.10

NAILS, Cut (100 lb keg)

To Dealers (33)	
Conshohocken,Pa. A3	$9.80
Wheeling,W.Va. W10	9.80

POLISHED STAPLES	Col.
AlabamaCity,Ala. R2	175
Aliquippa,Pa. J5	175
Atlanta A11	177
Bartonville,Ill. K4	177
Crawfordsville,Ind. MS	177
Donora,Pa. A7	175
Duluth A7	175
Fairfield,Ala. T2	175
Houston S5	180
Jacksonville,Fla.(20) MS	186
Johnstown,Pa. B2	175
Joliet,Ill. A7	175
KansasCity,Mo. S5	180
Kokomo,Ind. C16	177
Minnequa,Colo. C10	180
Pittsburg,Calif. C11	194
Rankin,Pa. A7	175
S.Chicago,Ill. R2	175
SparrowsPt.,Md. B2	177
Sterling,Ill.(7) N15	175
Worcester,Mass. A7	181

TIE WIRE, Automatic Baler (14½ Ga.)(Per 97 lb Net Box)

Coil No. 3150	
AlabamaCity,Ala. R2	$10.26
Atlanta A11	10.36
Bartonville,Ill. K4	10.36
Buffalo W12	10.26
Chicago W13	10.26
Crawfordsville,Ind. MS	10.36
Donora,Pa. A7	10.26
Duluth A7	10.26
Fairfield,Ala. T2	10.26
Houston S5	10.51
Jacksonville,Fla. MS	10.82
Johnstown,Pa. B2	10.26
Joliet,Ill. A7	10.26
KansasCity,Mo. S5	10.51
Kokomo,Ind. C16	10.36
LosAngeles B3	11.05
Minnequa,Colo. C10	10.51
Pittsburg,Calif. C11	11.04
S.Chicago,Ill. R2	10.26
S.SanFrancisco C10	11.04
SparrowsPt.,Md. B2	10.36
Sterling,Ill.(37) N15	10.36

Coil No. 6500 Stand.	
AlabamaCity,Ala. R2	$10.60
Atlanta A11	10.70
Bartonville,Ill. K4	10.70
Buffalo W12	10.60
Chicago W13	10.60
Crawfordsville,Ind. MS	10.70
Donora,Pa. A7	10.60
Duluth A7	10.60
Fairfield,Ala. T2	10.60
Houston S5	10.85
Jacksonville,Fla. MS	11.16
Johnstown,Pa. B2	10.60
Joliet,Ill. A7	10.60
KansasCity,Mo. S5	10.85
Kokomo,Ind. C16	10.70
LosAngeles B3	11.40
Minnequa,Colo. C10	10.85
Pittsburg,Calif. C11	11.40
S.Chicago,Ill. R2	10.60
S.SanFrancisco C10	11.40
SparrowsPt.,Md. B2	10.70
Sterling,Ill.(37) N15	10.70

Coil No. 6500 Interim	
AlabamaCity,Ala. R2	$10.65
Atlanta A11	10.75
Bartonville,Ill. K4	10.75
Buffalo W12	10.65
Chicago W13	10.65
Crawfordsville,Ind. MS	10.75
Donora,Pa. A7	10.65
Duluth A7	10.65
Fairfield,Ala. T2	10.65
Houston S5	10.90
Jacksonville,Fla. MS	11.21
Johnstown,Pa. B2	10.65
Joliet,Ill. A7	10.65
KansasCity,Mo. S5	10.90
Kokomo,Ind. C16	10.75
LosAngeles B3	11.45
Minnequa,Colo. C10	10.90
Pittsburg,Calif. C11	11.45
S.Chicago,Ill. R2	10.65
S.SanFrancisco C10	11.45
SparrowsPt.,Md. B2	10.75
Sterling,Ill.(37) N15	10.75

BALE TIES, Single Loop	Col.
AlabamaCity,Ala. R2	212
Atlanta A11	214
Bartonville,Ill. K4	214
Crawfordsville,Ind. MS	214
Donora,Pa. A7	212
Duluth A7	212
Fairfield,Ala. T2	212
Houston S5	217
Jacksonville,Fla. MS	219
Joliet,Ill. A7	212
KansasCity,Mo. S5	217
Kokomo,Ind. C16	214
Minnequa,Colo. C10	217
Pittsburg,Calif. C11	236
S.SanFrancisco C10	236
SparrowsPt.,Md. B2	214
Sterling,Ill.(7) N15	214

FENCE POSTS

Birmingham C15	172
ChicagoHts., Ill. C2, I-2	172
Duluth A7	172
Franklin,Pa. F5	172
Huntington,W.Va. C15	172
Johnstown,Pa. B2	172
Marion,O. P11	172
Minnequa,Colo. C10	177
Sterling,Ill.(1) N15	172
Tonawanda,N.Y. B12	174

WIRE, Barbed	Col.
AlabamaCity,Ala. R2	193**
Aliquippa,Pa. J5	190§
Atlanta A11	198*
Bartonville,Ill. K4	198
Crawfordsville,Ind. MS	198
Donora,Pa. A7	193†
Duluth A7	193†
Fairfield,Ala. T2	193†
Houston S5	198**
Jacksonville,Fla. MS	203
Johnstown,Pa. B2	196§
Joliet,Ill. A7	193†
KansasCity,Mo. S5	198**
Kokomo,Ind. C16	195†
Minnequa,Colo. C10	198**
Monessen,Pa. P7	196§
Pittsburg,Calif. C11	213†
Rankin,Pa. A7	193†
S.Chicago,Ill. R2	193**
S.SanFrancisco C10	213**
SparrowsPoint,Md. B2	198§
Sterling,Ill.(7) N15	198††

WOVEN FENCE, 9-15 Ga. Col.

Ala.City,Ala. R2	187**
Aliq'ppa,Pa.9-14½ga.J5	190§
Atlanta A11	192*
Bartonville,Ill. K4	192
Crawfordsville,Ind. MS	192
Donora,Pa. A7	187†
Duluth A7	187†
Fairfield,Ala. T2	187†
Houston S5	192**
Jacksonville,Fla. MS	197
Johnstown,Pa.(43) B2	190§
Joliet,Ill. A7	187†
KansasCity,Mo. S5	192**
Kokomo,Ind. C16	189†
Minnequa,Colo. C10	192**
Pittsburg,Calif. C11	210†
Rankin,Pa. A7	187†
S.Chicago,Ill. R2	187**
Sterling,Ill.(7) N15	192††

WIRE (16 gage)	An'ld Stone	Galv. Stone
Ala.City,Ala.R2	17.15	18.70**
Aliq'ppa.Pa. J5	17.15	18.95
Bartonville K4	17.25	19.05
Cleveland A7	17.15	- - -
Crawf'dsville MS	17.25	19.05
Fostoria,O. S1	17.65	19.20†
Houston S5	17.40	18.95**
Jacksonville MS	17.50	19.30
Johnstown B2	17.15	18.95§
Kan.City,Mo. S5	17.40	- - -
Kokomo C16	17.25	18.80†
Minnequa C10	17.40	18.95**
P'lm'r,Mass.W12	17.45	19.00†
Pitts.,Calif. C11	17.50	19.05†
SparrowsPt., B2	17.25	19.05§
Sterling(37)N15	17.25	19.05††
Waukegan A7	17.15	18.70†
Worcester A7	17.45	- - -

WIRE, Merchant Quality (6 to 8 gage) An'ld Galv.

Ala.City,Ala.	R2	8.65 9.20**
Aliquippa	J5	8.65 9.325§
Atlanta(48)	A11	8.75 9.425*
Bartonville(48)	K4	8.75 9.425
Buffalo	W12	8.65 9.20†
Cleveland	A7	8.65 - - -
Crawfordsville	MS	8.75 9.425
Donora,Pa.	A7	8.65 9.20†
Duluth	A7	8.65 9.20†
Fairfield	T2	8.65 9.20†
Houston(48)	S5	8.90 9.45**
Jacks'ville,Fla.	MS	9.00 9.675
Johnstown	B2(48)	8.65 9.325§
Joliet,Ill.	A7	8.65 9.20†
Kans.City(48)	S5	8.90 9.45**
Kokomo	C16	8.75 9.30†
LosAngeles	B3	9.60 10.275§
Minnequa	C10	8.90 9.45**
Monessen	P7(48)	8.65 9.325§
Palmer,Mass.	W12	8.95 9.50†
Pitts.,Calif.	C11	9.60 10.15†
Rankin,Pa.	A7	8.65 9.20†
S.Chicago	R2	8.65 9.20**
S.SanFran.	C10	9.60 10.15**
Spar'wsPt.	B2(48)	8.75 9.425§
Sterling(48)	N15	8.90 9.575††
Sterling(1)	(48)	8.80 9.475††
Struthers,O.	Y1	8.65 9.30‡
Worcester,Mass.	A7	8.95 9.50†

Based on zinc price of: *13.50. †5c. §10c. ‡Less than 10c. ††10.50c. **Subject to zinc equalization extras.

FASTENERS

(Base discounts, full container quantity, per cent off list, f.o.b. mill)

BOLTS

Carriage, Machine Bolts

Full Size Body (cut thread)

½ in. and smaller:	
6 in. and shorter	49.0
Longer than 6 in.	39.0
⅝ in. thru 1 in.:	
6 in. and shorter	39.0
Longer than 6 in.	35.0
1⅛ in. and larger:	
All lengths	35.0

Undersized Body (rolled thread)

½ in. and smaller:	
6 in. and shorter	49.0

Carriage, Machine, Lag Bolts Hot Galvanized:

½ in. and smaller:	
6 in. and shorter	29.0
Longer than 6 in.	15.0
⅝ in. and larger:	
All lengths	12.0

Lag Bolts (all diam.)

6 in. and shorter	49.0
Longer than 6 in.	39.0

Plow and Tap Bolts

½ in. and smaller by 6 in. and shorter	49.0
Larger than ½ in. or longer than 6 in.	39.0

Blank Bolts 39.0

Step, Elevator, Tire Bolts 49.0

Stove Bolts, Slotted:

⅛ to ¼ in. incl.	
3 in. and shorter	55.0
⅝ to ½ in., inclusive	55.0

NUTS

Reg. & Heavy Square Nuts:

All sizes	55.5

Square Nuts, Reg. & Heavy, Hot Galvanized:

All sizes	41.0

Hex Nuts, Reg. & Heavy, Hot Pressed:

¾ in. and smaller	60.5
⅞ in. to 1 in., incl.	55.5
1⅛ in. to 1½ in., incl.	58.5
1⅝ in. and larger	53.5

Hex Nuts, Reg. & Heavy, Cold Punched:

¾ in. and smaller	60.5
⅞ in. to 1½ in., incl.	55.5
1⅝ in. and larger	53.5

Hex Nuts, All Types, Hot Galvanized:

¾ in. and smaller	46.5
⅞ in. to 1 in., incl.	41.5
1⅛ in. to 1½ in., incl.	46.5

Hex Nuts, Semifinished, Heavy (Incl. Slotted):

¾ in. and smaller	60.5
⅞ in. to 1½ in., incl.	55.5
1⅝ in. and larger	53.5

Hex Nuts, Finished (Incl. Slotted and Castellated):

1 in. and smaller	63.0
1⅛ in. to 1½ in., incl.	59.0
1⅝ in. and larger	53.5

Semifinished Hex Nuts, Reg. (Incl. Slotted):

⅝ in. and smaller	60.5
¾ in. to 1 in., incl.	63.0
1⅛ in. to 1½ in., incl.	59.0
1⅝ in. and larger	53.5

CAP AND SETSCREWS

(Base discounts, packages, per cent off list, f.o.b. mill)

Hex Head Capscrews, Coarse or Fine Thread, Bright:

6 in. and shorter:

⅝ in. and smaller	40.0
¾, ⅞, and 1 in. diam.	22.0

Longer than 6 in.:

⅝ in. and smaller	8.0
¾, ⅞, and 1 in. diam.	+ 6.0

High Carbon, Heat Treated:

6 in. and shorter:

⅝ in. and smaller	26.0
¾, ⅞, and 1 in. diam.	3.0

Longer than 6 in.:

⅝ in. and smaller	+ 13.0
¾, ⅞, and 1 in. diam.	+ 32.0

Flat Head Capscrews:

¾ in. and smaller	+ 76.0

Setscrews, Square Head, Cup Point, Coarse Thread:

Through 1 in. diam.:

6 in. and shorter	Net
Longer than 6 in.	+ 23

RIVETS

F.o.b. Cleveland and/or freight equalized with Pittsburgh, f.o.b. Chicago and/or freight equalized with Birmingham except where equalization is too great.

Structural ½ in., larger 12.25

⅞ in. under: List less 19%

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	25.98	23.54
1¼	13	....	30.78	23.36
1½	13	29.03	34.01	25.83
1¾	13	34.29	40.18	30.51
2	13	38.44	45.05	34.20
2¼	13	43.29	50.75	38.52
2¼	12	46.99	55.06	41.81
2½	12	51.76	60.65	46.05
2¾	12	56.04	65.67	49.88
3	12	59.76	70.03	53.19

RAILWAY MATERIALS

	Standard No. 1	Standard No. 2	Tee Rails All No. 2	Tee Rails 60 lb Under
Rails				
Bessemer,Pa. U5	5.525	5.425	....	6.50
Ensley,Ala. T2	5.525	5.425	....	6.50
Fairfield,Ala. T2	....	....	....	6.50
Gary,Ind. U5	5.525	5.425	....	....
Huntington,W.Va. C15	....	....	....	6.50
IndianaHarbor,Ind. I-2	5.525	5.425	5.475	....
Johnstown,Pa. B2	....	....	....	(16)6.50
Lackawanna,N.Y. B2	5.525	5.425	....	6.50
Minnequa,Colo. C10	5.525	5.425	....	7.00
Steelton,Pa. B2	5.525	5.425	....	....
Williamsport,Pa. S19	....	....	....	6.50

TIE PLATES

Fairfield,Ala. T2	6.60
Gary,Ind. U5	6.60
Ind.Harbor,Ind I-2	6.60
Lackawanna,N.Y. B2	6.60
Minnequa,Colo. C10	6.60
Seattle B3	6.75
Steelton,Pa. B2	6.60
Torrance,Calif. C11	6.75

JOINT BARS

Bessemer,Pa. U5	6.975
Fairfield,Ala. T2	6.975
Ind.Harbor,Ind. I-2	6.975
Joliet,Ill. U5	6.975
Lackawanna,N.Y. B2	6.975
Minnequa,Colo. C10	6.975
Steelton,Pa. B2	6.975

AXLES

Ind.Harbor,Ind. S13	8.775
Johnstown,Pa. B2	8.775

TRACK BOLTS, Untreated

Cleveland R2	14.75
KansasCity,Mo. S5	14.75
Lebanon,Pa. B2	14.75
Minnequa,Colo. C10	14.75
Pittsburgh P14	14.75
Seattle B3	15.25

SCREW SPIKES

Lebanon,Pa. B2	14.50

STANDARD TRACK SPIKES

Fairfield,Ala. T2	9.75
Ind.Harbor,Ind. I-2, Y1	9.75
KansasCity,Mo. S5	9.75
Lebanon,Pa. B2	9.75
Minnequa,Colo. C10	9.75
Pittsburgh J5	9.75
Seattle B3	10.25
S.Chicago,Ill. R2	9.75
Struthers,O. Y1	9.75
Youngstown R2	9.75

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1⅛ to under 1 7/16 in.; 1 7/16 to under 1 15/16 in., 6.70c; 1 15/16 to 8 in., inclusive, 7.05c.
(6) Chicago or Birm. base.
(7) Chicago base 2 cols. lower.
(8) 16 Ga. and heavier.
(9) Merchant quality; add 0.35c for special quality.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ¾" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) Plus 1c per 100 lb.
(21) New Haven, Conn. base.
(22) Deld. San Francisco Bay area.
(23) Special quality.
(24) Deduct 0.15c, finer than 15 Ga.
(25) Bar mill bands.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c.
(31) Widths over ⅝ in.; 7.60c, for widths ⅝ in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) Chicago base, 10 points lower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. in mill zone or within switching limits, 5.685c.
(43) 9-14½ Ga.
(44) To fabricators.
(48) 6-7 Ga.
(49) 3½ in. and smaller rounds; 9.30c, over 3½ in. and other shapes.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25
Ambridge, Pa. N2	+9.25	....	+2.75	....	+0.25	....	1.25	....	1.25	....	1	....	3.5	....
Lorain, O. N3	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25
Youngstown Y1	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25

ELECTRIC STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Alton, Ill. L1	....	....	....	....	....	....	3.25	+12	6.25	+8	9.75	+3.5	12.25	+2.75
Benwood, W. Va. W10	4.5	+22	+7.5	+31	+18	+39.5	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Butler, Pa. F6	5.5	+21	+6.5	+30	+17	+38.5	....	....	....	....	....	....	....	....
Etna, Pa. N2	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Fairless, Pa. N3	....	....	....	....	....	....	3.25	+12	6.25	+8	9.75	+3.5	12.25	+2.75
Fontana, Calif. K1	....	....	....	....	....	....	+8.25	+23.5	+5.25	+19.5	+1.75	+15	0.75	+14.25
Indiana Harbor, Ind. Y1	....	....	....	....	....	....	4.25	+11	7.25	+7	10.75	+2.5	13.25	+3.25
Lorain, O. N3	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Sharon, Pa. S4	5.5	+21	+6.5	+30	+17	+38.5	....	....	....	....	....	....	....	....
Sharon, Pa. M6	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Sparrows Pt., Md. B2	3.5	+23	+8.5	+32	+19	+40.5	3.25	+12	6.25	+8	9.75	+3.5	12.25	+2.75
Wheatland, Pa. W9	5.5	+21	+6	+30	+17	+38.5	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Youngstown R2, Y1	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75

Size—Inches	1½		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.73		3.68		5.82		7.62		9.20		10.89	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	....	....	....	....
Alton, Ill. L1	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5	....	....	....	....
Benwood, W. Va. W10	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5
Etna, Pa. N2	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5
Fairless, Pa. N3	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5	4.25	+12.5	4.25	+12.5
Fontana, Calif. K1	1.25	+13.25	1.75	+12.75	3.25	+13	3.25	+13	+7.25	+24	+7.25	+24
Indiana Harbor, Ind. Y1	13.75	+0.75	14.25	+0.25	15.75	+0.5	15.25	+0.5	5.25	+11.5	5.25	+11.5
Lorain, O. N3	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	....	....	....	....
Sharon, Pa. M6	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	....	....	....	....
Sparrows Pt., Md. B2	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5	4.25	+12.5	4.25	+12.5
Wheatland, Pa. W9	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5
Youngstown R2, Y1	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5

*Galvanized pipe discounts based on current price of zinc (10.00c, East St. Louis).

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	—Rerolling— Ingot	Slabs	Forging Billets	H.R. Strip	H.R. Rods; C.F. Wire	Bars; Structural Shapes	Plates	Sheets	C.R. Strip; Flat Wire
201	22.00	27.00	....	36.00	40.00	42.00	44.25	48.50	45.00
202	23.75	30.25	36.50	39.00	40.75	43.00	45.00	49.25	49.25
301	23.25	28.00	37.25	37.25	42.00	44.25	46.25	51.25	47.50
302	25.25	31.50	38.00	40.50	42.75	45.00	47.25	52.00	52.00
302B	25.50	32.75	40.75	45.75	45.00	47.25	49.50	57.00	57.00
303	....	32.00	41.00	46.00	45.50	48.00	50.00	56.75	56.75
304	27.00	33.25	40.50	44.25	45.25	47.75	50.75	55.00	55.00
304L	....	....	48.25	51.50	53.00	55.50	58.50	63.25	62.75
305	28.50	36.75	42.50	47.50	45.25	47.75	51.25	58.75	58.75
308	30.75	38.25	47.25	50.25	52.75	55.75	60.25	63.00	63.00
309	39.75	49.50	57.75	64.50	63.75	67.00	71.00	80.50	80.50
310	49.75	61.50	78.00	84.25	86.50	91.00	92.75	96.75	96.75
314	....	....	77.50	....	86.50	91.00	92.75	99.00	104.25
316	39.75	49.50	62.25	69.25	69.25	73.00	76.75	80.75	80.75
316L	....	55.50	70.00	76.50	77.00	80.75	84.50	89.25	88.50
317	48.00	60.00	76.75	88.25	86.25	90.75	93.50	101.00	101.00
321	32.25	40.00	47.00	53.50	52.50	55.50	59.75	65.50	65.50
330	....	....	106.75	....	95.25	106.75	105.50	108.00	149.25
18-S CbTa	37.00	46.50	55.75	63.50	61.50	64.75	69.75	79.25	79.25
403	....	....	32.00	....	35.75	37.75	40.25	48.25	48.25
405	19.50	25.50	29.75	36.00	33.50	35.25	37.50	46.75	46.75
410	16.75	21.50	28.25	31.00	32.00	33.75	35.00	40.25	40.25
416	....	....	28.75	....	32.50	34.25	36.00	48.25	48.25
420	26.00	33.50	34.25	41.75	39.25	41.25	45.25	52.00	62.00
430	17.00	21.75	28.75	32.00	32.50	34.25	36.00	40.75	40.75
430F	....	....	29.50	....	33.00	34.75	36.75	51.75	42.00
431	....	28.75	37.75	....	42.00	44.25	46.00	56.00	56.00
446	....	....	39.25	59.00	44.25	46.50	47.75	70.00	70.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; American Steel & Wire Div., U. S. Steel Corp.; Anchor Drawn Steel Co., division of Vanadium-Alloys Steel Co.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; A. M. Byers Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Charter Wire Products; Crucible Steel Co. of America; Damascus Tube Co.; Dearborn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Firth Sterling Inc.; Fort Wayne Metals Inc.; Green River Steel Corp., subsidiary of Jessop Steel Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Ellwood Ivins Steel Tube Works Inc.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Stainless Steel Div., Jones & Laughlin Steel Corp.; Joslyn Stainless Steels, division of Joslyn Mfg. & Supply Co.; Latrobe Steel Co.; Lukens Steel Co.; Maryland Fine & Specialty Wire Co. Inc.; McLouth Steel Corp.; Metal Forming Corp.; Midvale-Heppenstall Co.; National Standard Co.; National Tube Div., U. S. Steel Corp.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Riverside-Alloy Metal Div., H. K. Porter Company Inc.; Rodney Metals Inc.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Standard Tube Co.; Superior Steel Div., Copperweld Steel Co.; Superior Tube Co.; Swepco Tube Corp.; Techalloy Co. Inc.; Timken Roller Bearing Co.; Trent Tube Co., subsidiary of Crucible Steel Co. of America; Tube Methods Inc.; Ulbrich Stainless Steels Inc.; U. S. Steel Corp.; Universal-Cyclops Steel Corp.; Vanadium-Alloys Steel Co.; Wall Tube & Metal Products Co.; Wallingford Steel Co., subsidiary of Allegheny Ludlum Steel Corp.; Washington Steel Corp.

Clad Steel

	Plates—Carbon Base 5%	10%	15%	20%	Sheets Carbon Base 20%
Stainless					
302	....	....	....	....	37.50
304	34.70	37.95	42.25	46.70	39.75
304L	36.90	40.55	45.10	49.85	....
316	40.35	44.50	49.50	54.50	58.25
316L	45.05	49.35	54.70	60.10	....
316 Cb	47.30	53.80	61.45	69.10	....
321	36.60	40.05	44.60	49.30	47.25
347	38.25	42.40	47.55	52.80	57.00
405	28.60	29.85	33.35	36.85	....
410	28.15	29.55	33.10	36.70	....
430	28.30	29.80	33.55	37.25	....
Inconel	48.90	59.55	70.15	80.85	....
Nickel	41.65	51.95	62.30	72.70	....
Nickel, Low Carbon	41.95	52.60	63.30	74.15	....
Monel	43.35	53.55	63.80	74.05	....
Copper*	....	....	....	....	46.00

	Strip, Carbon Base —Cold Rolled— 10%	Both Sides
Copper*	33.10	38.75

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4, and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Regular Carbon	0.305	Cr-Hot Work	0.475
Extra Carbon	0.360	W-Cr Hot Work	0.500
Special Carbon	0.475	V-Cr Hot Work	0.520
Oil Hardening	0.475	Hi-Carbon-Cr	0.925

Grade by Analysis (%)

W	Cr	V	Co	Mo		$ per lb
20.25	4.25	1.6	12.25	....	....	4.285
18.25	4.25	1	4.75	....	....	2.500
18	4	2	9	....	....	2.870
18	4	2	....	....	....	1.960
18	4	1	....	....	....	1.795
9	3.5	..	....	....	....	1.395
13.5	4	3	....	....	....	2.060
13.75	3.75	2	5	....	....	2.440
6.4	4.5	1.9	....	5	....	1.300
6	4	3	....	6	....	1.545
1.5	4	1	....	8.5	....	1.155

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, F2, J3, L3, M14, S8, U4, V2, and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal transportation tax.

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Birmingham District				
Birmingham R2	62.00	62.50‡	....	....
Birmingham U6	....	62.50‡	66.50	....
Woodward,Ala. W15	62.00**	62.50‡	66.50	....
Cincinnati, deld.	....	70.20	....	....
Buffalo District				
Buffalo H1, R2	66.00	66.50	67.00	67.50
N.Tonawanda,N.Y. T9	....	66.50	67.00	67.50
Tonawanda,N.Y. W12	66.00	66.50	67.00	67.50
Boston, deld.	77.29	77.79	78.29	....
Rochester,N.Y., deld.	69.02	69.52	70.02	....
Syracuse,N.Y., deld.	70.12	70.62	71.12	....
Chicago District				
Chicago I-3	66.00	66.50	66.50	67.00
S.Chicago,Ill. R2	66.00	66.50	66.50	67.00
S.Chicago,Ill. W14	66.00	....	66.50	67.00
Milwaukee, deld.	69.02	69.52	69.52	70.02
Muskegon,Mich., deld.	....	74.52	74.52	....
Cleveland District				
Cleveland R2, A7	66.00	66.50	66.50	67.00
Akron,Ohio, deld.	69.12	69.62	69.62	70.12
Mid-Atlantic District				
Birdsboro,Pa. B10	68.00	68.50	69.00	69.50
Chester,Pa. P4	68.00	68.50	69.00	....
Swedeland,Pa. A3	68.00	68.50	69.00	69.50
NewYork, deld.	....	75.50	76.00	....
Newark,N.J., deld.	72.69	73.19	73.69	74.19
Philadelphia, deld.	70.41	70.91	71.41	71.99
Troy,N.Y. R2	68.00	68.50	69.00	69.50
Pittsburgh District				
NevilleIsland,Pa. P6	66.00	66.50	66.50	67.00
Pittsburgh (N&S sides), Aliquippa, deld.	....	67.95	67.95	68.48
McKeesRocks,Pa., deld.	....	67.60	67.60	68.13
Lawrenceville,Homestead, Wilmerding,Monaca,Pa., deld.	....	68.26	68.26	68.79
Verona,Trafford,Pa., deld.	68.29	68.82	68.82	69.35
Brackenridge,Pa., deld.	68.60	69.10	69.10	69.63
Midland,Pa. C18	66.00	....	....	....
Youngstown District				
Hubbard,Ohio Y1	....	....	66.50	....
Sharpsville,Pa. S6	66.00	....	66.50	67.00
Youngstown Y1	....	....	66.50	67.00
Mansfield,Ohio, deld.	70.90	....	71.40	71.90
Duluth I-3	66.00	66.50	66.50	67.00
Erie,Pa. I-3	66.00	66.50	66.50	67.00
Everett,Mass. E1	67.50	68.00	68.50	....
Fontana,Calif. K1	75.00	75.50	....	....
Geneva,Utah C11	66.00	66.50	....	....
GraniteCity,Ill. G4	67.90	68.40	68.90	....
Ironton,Utah C11	66.00	66.50	....	....
Minnequa,Colo. C10	68.00	68.50	69.00	....
Rockwood,Tenn. T3	....	62.50‡	66.50	....
Toledo,Ohio I-3	66.00	66.50	66.50	67.00
Cincinnati, deld.	72.54	73.04	....	....

**Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.
‡Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.50.

PIG IRON DIFFERENTIALS

Silicon: Add 75 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.
Manganese: Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.
Nickel: Under 0.50% no extra; 0.50-0.74%, inclusive, add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.50%; starting with silicon over 11.50% add $1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add $1 for each 0.50% Mn over 1%)

Jackson,Ohio I-3, J1	$78.00
Buffalo H1	79.25

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.25 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

CalvertCity,Ky. P15	$99.00
Niagara Falls,N.Y. P15	99.00
Keokuk,Iowa Open-hearth & Fdry. $9 freight allowed K2	103.50
Keokuk,Iowa O.H. & Fdry. 12½ lb piglets, 16% Si, max fr'gt allowed up to $9, K2	106.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Lyles,Tenn. T3 (Phos. 0.035% max)	$78.50
Rockwood,Tenn. T3 (Phos. 0.035% max)	78.50
Troy,N.Y. R2 (Phos. 0.035% max)	74.00
Philadelphia, deld.	82.67
Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Duluth I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Erie,Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
NevilleIsland,Pa. P6 (Intermediate) (Phos. 0.036-0.075% max)	71.00

Warehouse Steel Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Chattanooga, Houston, Seattle, no charge.

	SHEETS				STRIP	BARS			Standard Structural Shapes	PLATES	
	Hot-Rolled	Cold-Rolled	Gal. 10 Ga.†	Stainless Type 302	Hot-Rolled*	H.R. Rounds	C.F. Rds.‡	H.R. Alloy 4140††§		Carbon	Floor
Atlanta	8.59§	9.86§	....	....	8.64	9.01	10.68	....	9.05	8.97	10.90
Baltimore	8.28	8.88	9.78	....	8.76	9.06	11.34#	15.18	9.19	8.66	10.14
Birmingham	8.18	9.45	11.07	....	8.23	8.60	10.57	....	8.64	8.56	10.70
Boston	9.38	10.44	11.45	53.50	9.42	9.73	12.90#	15.28	9.63	9.72	11.20
Buffalo	8.40	9.00	10.07	55.98	8.50	8.80	10.90#	15.00	8.90	8.90	10.45
Chattanooga	8.35	9.69	9.65	....	8.40	8.77	10.46	....	8.88	8.80	10.66
Chicago	8.20	9.45	10.10	53.00	8.23	8.60	8.80	14.65	8.64	8.56	9.88
Cincinnati	8.34	9.48	10.10	52.43	8.54	8.92	9.31	14.96	9.18	8.93	10.21
Cleveland	8.18	9.45	10.20	52.33	8.33	8.69	10.80#	14.74	9.01	8.79	10.11
Dallas	8.85	10.15	....	....	9.00	8.95	11.01	....	9.00	9.45	10.70
Denver	9.38	11.75	....	....	9.41	9.78	11.10	....	9.82	9.74	11.06
Detroit	8.43	9.70	10.45	56.50	8.58	8.90	9.15	14.91	9.18	8.91	10.13
Erie, Pa.	8.20	9.45	9.95‖	....	8.50	8.75	9.05‖	....	9.00	8.85	10.10
Houston	7.10	8.40	8.45	....	7.25	7.20	10.75	....	7.25	7.70	10.30
Jackson, Miss.	8.52	9.79	....	....	8.57	8.94	10.68	....	8.97	8.90	10.74
Los Angeles	8.50	10.75	11.65	57.60	8.55	8.55	12.00	....	8.60	8.55	9.95
Memphis, Tenn.	8.55	9.80	....	....	8.60	8.97	11.96#	....	9.01	8.93	10.56
Milwaukee	8.33	9.58	10.23	....	8.36	8.73	9.03	14.78	8.85	8.69	10.01
Moline, Ill.	8.55	9.80	10.35	....	8.58	8.95	9.15	....	8.99	8.91	....
New York	8.87	10.13	10.56	53.08	9.31	9.57	12.76#	15.09	9.35	9.43	10.71
Norfolk, Va.	8.40	....	....	....	9.10	9.10	12.00	....	9.40	8.85	10.35
Philadelphia	8.00	8.90	9.92	52.69	8.69	8.65	11.51#	15.01	8.50	8.77	9.77**
Pittsburgh	8.18	9.45	10.45	52.00	8.33	8.60	10.80#	14.65	8.64	8.56	9.88
Portland, Oreg.	8.50	11.20	11.55	57.38	9.55	8.65	14.50	15.95	8.65	8.30	11.50
Richmond, Va.	8.40	....	10.40	....	9.10	9.00	....	....	9.40	8.85	10.35
St. Louis	8.54	9.79	10.46	....	8.59	8.97	9.41	15.01	9.10	8.93	10.25
St. Paul	8.79	10.04	10.71	....	8.84	9.21	9.66	....	9.38	9.30	10.49
San Francisco	9.35	10.75	11.00	55.10	9.45	9.70	13.00	16.10	9.50	9.60	12.00
Seattle	9.95	11.15	12.00	57.38	10.00	10.10	14.05	16.35	9.80	9.70	12.10
South'ton, Conn.	9.07	10.33	10.71	....	9.48	9.74	....	....	9.57	9.57	10.91
Spokane	9.95	11.15	12.00	57.38	10.00	10.10	14.05	17.20	9.80	9.70	12.10
Washington	8.88	....	....	....	9.36	9.56	10.94	....	9.79	9.26	10.74

*Prices do not include gage extras; †prices include gage and coating extras; ‡includes 35-cent bar quality extras; §42 in. and under; **¼ in. and heavier; ††as annealed; ‡‡over 4 in.; §§over 3 in.; #1 in. round C-1018.

Base quantities, 2000 to 4999 lb except as noted; cold-rolled strip and cold-finished bars, 2000 lb and over except in Seattle, 2000 to 9999 lb, and in Los Angeles, 6000 lb and over; stainless sheets, 8000 lb except in Chicago, New York, Boston, Seattle, Portland, Oreg. 10,000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb, except in Portland, Oreg., 1000 to 9999 lb; §—400 to 9999 lb; ‖—1000 to 1999 lb; §—2000 to 3999 lb; ¶¶—2000 lb and over.

Refractories

Fire Clay Brick (per 1000)

High-Heat Duty: Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Winburne, Snow Shoe, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, Ohio, Ottawa, Ill., Stevens Pottery, Ga., $135; Salina, Pa., $140; Niles, Ohio, $138; Cutler, Utah, $165.

Super-Duty: Ironton, Ohio, Vandalia, Mo., Olive Hill, Ky., Clearfield, Salina, Winburne, Snow Shoe, Pa., New Savage, Md., St. Louis, $175; Stevens Pottery, Ga., $185; Cutler, Utah, $233.

Silica Brick (per 1000)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Pt. Matilda, Pa., Portsmouth, Ohio, Hawstone, Pa., $150; Warren, Niles, Windham, Ohio, Hays, Latrobe, Morrisville, Pa., $155; E. Chicago, Ind., Joliet, Rockdale, Ill., $160; Lehigh, Utah, $175; Los Angeles, $180.

Super-Duty: Sproul, Hawstone, Pa., Niles, Warren, Windham, Ohio, Leslie, Md., Athens, Tex., $157; Morrisville, Hays, Latrobe, Pa., $160; E. Chicago, Ind., $167; Curtner, Calif., $182.

Semisilica Brick (per 1000)

Clearfield, Pa., $140; Philadelphia, $137; Woodbridge, N. J., $135.

Ladle Brick (per 1000)

Dry Pressed: Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Vanport, Pa., Mexico, Vandalia, Mo., Wellsville, Irondale, New Salisbury, Ohio, $96.75; Clearfield, Pa. Portsmouth, Ohio, $102.

High-Alumina Brick (per 1000)

50 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $235; Danville, Ill., $238; Philadelphia, Clearfield, Pa., $230; Orviston, Snow Shoe, Pa., $245.

60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $295; Danville, Ill., $298; Philadelphia, Clearfield, Orviston, Snow Shoe, Pa., $305.

70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $335; Danville, Ill., $338; Philadelphia, Clearfield, Orviston, Snow Shoe, Pa., $345.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $188.

Nozzles (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $310.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., $234.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, Gibsonburg, Narlo, Ohio, $16.75; Thornton, McCook, Ill., $17; Dolly Siding, Bonne Terre, Mo., $15.

Magnesite (per net ton)

Domestic, dead-burned, bulk ½ in. grains with fines: Chewelah, Wash., Luning, Nev., $46; ⅜ in. grains with fines: Baltimore, $73.

Fluorspar

Metallurgical grades, f.o.b. shipping point in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $37-41; 70%, $36.40; 60%, $33-36.50. Imported, net tons, f.o.b. cars point of entry, duty paid, metallurgical grade: European, $33-34; Mexican, all rail, duty paid, $25.25-25.75; barge, Brownsville, Tex., $27.25-27.75.

Metal Powder

(Per pound f.o.b. shipping point in ton lots for minus 100 mesh, except as noted)

	Cents
Sponge Iron, Swedish: Deld. east of Mississippi River, ocean bags 23,000 lb and over.. F.o.b. Riverton or Camden, N. J., west of Mississippi River.	10.50 9.50
Sponge Iron, Domestic, 98 + % Fe: Deld. east of Mississippi River, 23,000 lb and over	10.50
Electrolytic Iron: Melting stock, 99.9% Fe, irregular fragments of ¼ in. x 1.3 in.	28.00
Annealed, 99.5% Fe..	36.50
Unannealed (99 + % Fe)	36.00
Unannealed (99 + % Fe) (minus 325 mesh)	59.00
Powder Flakes (minus 16, plus 100 mesh)..	29.00
Carbonyl Iron: 98.1-99.9%, 3 to 20 microns, depending on grade, 93.00-290.00 in standard 200-lb containers; all minus 200 mesh.	
Aluminum: Atomized, 500-lb drum, freight allowed: Carlots	39.50
Ton lots	41.50
Antimony, 500-lb lots	42.00*
Brass, 5000-lb lots	30.30-45.70†
Bronze, 5000-lb lots	45.70-49.80†
Copper: Electrolytic	14.75*
Reduced	14.75*
Lead	7.50*
Manganese: Minus 35 mesh	64.00
Minus 100 mesh	70.00
Minus 200 mesh	75.00
Nickel, unannealed	$1.15
Nickel-Silver, 5000-lb lots	47.80-52.60†
Phosphor-Copper, 5000-lb lots	57.80
Copper (atomized) 5000-lb lots	38.30-46.80‡
Silicon	47.50
Solder	7.00*
Stainless Steel, 304	$1.07
Stainless Steel, 316	$1.26
Tin	14.50*
Zinc, 5000-lb lots	17.50-30.70‡

Tungsten:	Dollars
Melting grade, 99% 60 to 200 mesh, nominal:	
1000 lb and over..	3.15
Less than 1000 lb ..	3.30
Chromium, electrolytic 99.8% Cr min metallic basis	5.00

*Plus cost of metal. †Depending on composition. ‡Depending on mesh.

Electrodes

Threaded with nipple; unboxed, f.o.b. plant

GRAPHITE

Diam	Length	Per 100 lb
2	24	$60.75
2½	30	39.25
3	40	37.00
4	40	35.00
5⅛	40	34.75
6	60	31.50
7	60	28.25
8, 9, 10	60	28.00
12	72	26.75
14	60	26.75
16	72	25.75
17	60	26.25
18	72	26.25
20	72	25.25
24	84	26.00

CARBON

8	60	13.30
10	60	13.00
12	60	12.95
14	60	12.85
14	72	11.95
17	60	11.85
17	72	11.40
20	84	11.40
20	90	11.00
24	72, 84	11.25
24	96	10.95
30	84	11.05
40, 35	110	10.70
40	100	10.70

Imported Steel

(Base per 100 lb, landed, duty paid, based on current ocean rates. Any increase in these rates is for buyer's account. Source of shipment: Western continental European countries.)

	North Atlantic	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A 305	$5.53	$5.33	$5.33	$5.73
Bar Size Angles	5.73	5.58	5.58	5.99
Structural Angles	5.73	5.58	5.58	5.99
I-Beams	5.88	5.72	5.72	6.02
Channels	5.88	5.72	5.72	6.02
Plates (basic bessemer)	6.79	6.62	6.62	6.94
Sheets, H.R.	8.25	8.20	8.20	8.50
Sheets, C.R. (drawing quality)	9.00	8.95	8.95	9.25
Furring Channels, C.R., 1000 ft, ⅞ x 0.30 lb per ft	25.71	25.59	25.59	26.46
Barbed Wire (†)	6.65	6.65	6.65	7.00
Merchant Bars	6.23	6.07	6.07	6.43
Hot-Rolled Bands	7.20	7.15	7.15	7.55
Wire Rods, Thomas Commercial No. 5	6.73	6.73	6.73	7.13
Wire Rods, O.H. Cold Heading Quality No. 5	7.07	7.07	7.07	7.47
Bright Common Wire Nails ($)	8.02	8.02	7.92	8.20

†Per 82 lb, net, reel. $Per 100-lb kegs, 20d nails and heavier.

Ores

Lake Superior Iron Ore

(Prices effective for the 1958 shipping season, gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Mesabi bessemer	$11.60
Mesabi nonbessemer	11.45
Old Range bessemer	11.85
Old Range nonbessemer	11.70
Open-hearth lump	12.70
High phos.	11.45

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan. 30, 1957, and increases or decreases after that date are absorbed by the seller.

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

New Jersey, foundry and basic 62-64% concentrates	25.00-27.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 65%	25.00
N. African hematite (spot)	nom.
Brazilian iron ore, 68-69%	27.00

Tungsten Ore

Net ton, unit

Foreign wolframite, good commercial quality	$11.80-$12.20*
Domestic, concentrates f.o.b. milling points	20.00

*Before duty.

Manganese Ore

Mn 46-48%, Indian (export tax included), $135 per long ton unit, c.i.f. U. S. ports, duty for buyer's account: other than Indian, nominal; contracts by negotiation.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and Rhodesian

48% 3:1	$50.00
48% 2.8:1	48.00
48% no ratio	39.00

South African Transvaal

48% no ratio	$37.00
44% no ratio	27.00

Turkish

48% 3:1	$55.00

Domestic

Rail nearest seller

18% 3:1	39.00

Molybdenum

Sulfide concentrate, per lb of Mo content, mines, unpacked	$1.18

Antimony Ore

Per short ton unit of Sb content, c.i.f. seaboard

55-60%	$2.50-2.60
60-65%	2.60-2.90

Vanadium Ore

Cents per lb V_2O_5

Domestic	31.00

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, Pa., furnace	$14.75-15.75
Connellsville, Pa., foundry	18.00-18.50

Oven Foundry Coke

Birmingham, ovens	$28.85
Cincinnati, deld.	31.84
Buffalo, ovens	30.50
Camden, N. J., ovens	29.50
Detroit, ovens	30.50
Pontiac, Mich., d.l.d.	32.25
Saginaw, Mich., deld.	33.83
Erie, Pa., ovens	30.50
Everett, Mass., ovens:	
New England, deld.	31.55*
Indianapolis, ovens	29.75
Ironton, Ohio, ovens	29.00
Cincinnati, deld.	31.84
Kearny, N. J., ovens	29.75
Milwaukee, ovens	30.50
Neville Island (Pittsburgh), Pa., ovens	29.25
Painesville, Ohio, ovens	30.50
Cleveland, deld.	32.69
Philadelphia, ovens	29.50
St. Louis, ovens	31.50
St. Paul, ovens	29.75
Chicago, deld.	33.29
Swedeland, Pa., ovens	29.50
Terre Haute, Ind., ovens	29.75

*Or within $4.85 freight zone from works.

Coal Chemicals

Spot, cents per gallon, ovens

Pure benzene	36.00
Toluene, one deg	29.50
Industrial xylene	32.00-34.00

Per ton, bulk, ovens

Ammonium sulfate	$32.00-34.00

Cents per pound, producing point

Phenol: Grade 1, 17.50; Grade 2-3, 15.50; Grade 4, 17.50; Grade 5, 16.50; Grade 6, 14.50.

Ferroalloys

MANGANESE ALLOYS

Spiegeleisen: Carlot, per gross ton, Palmerton, Neville Island, Pa., 21-23% Mn, $105; 19-21% Mn, 1-3% Si, $102.50; 16-19% Mn, $100.50.

Standard Ferromanganese: (Mn 74-76%, C 7% approx). Base price per net ton: $245, Johnstown, Duquesne, Sheridan, Neville Island, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Add or subtract $2 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively. (Mn 79-81%). Lump $253 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

High-Grade Low-Carbon Ferromanganese: (Mn 85-90%). Carload, lump, bulk, max 0.07% C, 35.1c per lb of contained Mn, carload packed 36.4c, ton lots 37.9c, less ton 39.1c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max 0.03% C, 3.5c for max 0.50% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.25-1.5%, Si 1.5% max). Carload, lump, bulk, 25.5c per lb of contained Mn, packed, carload 26.8c, ton lot 28.4c, less ton 29.6c. Delivered. Spot, add 0.25c.

Manganese Metal: 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2%). Carload, lump, bulk, 45c per lb of metal; packed, 45.75c; ton lot 47.25c; less ton lot 49.25c. Delivered. Spot, add 2c.

Electrolytic Manganese Metal: Min carload, 34c; 2000 lb to min carload, 36c; 500 lb to 1999 lb, 38c; 50 lb cans, add 0.5c per lb. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or any point east of Mississippi; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk 1.50% C grade, 18-20% Si, 12.8c per lb of alloy. Packed, c.l. 14c, ton 14.45c, less ton 15.45c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. For 2% C grade, Si 15-17%, deduct 0.2% from above prices. For 3% C grade Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot, 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38.43%, Al 8% max, Si 4% max, C 0.10% max). Ton lot $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $200 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi River and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%). Contract $225 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l. lump, bulk 28.75c per lb of contained Cr; c.l. packed 30.30c, ton lot 32.05c; less ton 33.45c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: Cr 63-66% (Simplex), carload, lump, bulk, C 0.025% max, 36.75c per lb contained Cr; 0.010% max, 37.75c. Ton lot, add 3.5c; less ton, add 5.2c. Delivered.
Cr 67.71%, carload, lump, bulk, C 0.02% max, 41.00c per lb contained Cr; 0.025% max, 39.75c; 0.05% max, 39.00c; 0.10% max, 38.50c; 0.20% max, 38.25c; 0.50% max, 38.00c; 1.0% max, 37.75c; 1.5% max, 37.50c; 2.0% max, 37.25c. Ton lot, add 3.4c; less ton lot, add 5.1c. Delivered.

Foundry Ferrochrome, High-Carbon: (Cr 62-66%, C 5-7%, Si 7-10%). Contract, c.l., 2 in. x D, bulk 30.05c per lb of contained Cr. Packed, c.l. 31.65c, ton 33.45c, less ton 34.95c. Delivered. Spot, add 0.25c.

Foundry Ferrosilicon Chrome: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload, packed, 8M x D, 21.25c per lb of alloy, ton lot 22.50c; less ton lot 23.70c. Delivered. Spot, add 0.25c.

Ferrochrome-Silicon: Cr 39-41%, Si 42-45%, C 0.05% max or Cr 33-36%, Si 45-48%, C 0.05% max. Carload, lump, bulk, **3" x down** and 2" down, 27.50c per lb contained Cr. 14.20c per lb contained Si. 0.75" x down, 28.65c per lb contained Cr, 14.20c per lb contained Si. Delivered.

Chromium Metal Electrolytic: Commercial grade (Cr 99.8% min, metallic basis, Fe 0.2% max). Contract, carlot, packed ⅜" x D plate (about ⅛" thick) $1.29 per lb, ton lot $1.31, less ton lot $1.33. Delivered. Spot, add 5c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth grade (V 50-55%, Si 5% max, C 3% max). Contract, any quantity, $3.20 per lb of contained V. Delievered. Spot, add 10c. **Special Grade:** (V 50-55% or 70-75%, Si 2% max, C 0.5% max) $3.30. **High Speed Grade:** (V 50-55%, or 70-75%, Si 1.50% max, C. 0.20% max) $3.40.

Grainal: Vanadium Grainal No. 1 $1.05 per lb; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract less carload lot, packed, $1.38 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si. Packed 21.40c; ton lot 22.50c, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 14.20c per lb of contained Si. Packed c.l. 16.70c, ton lot 18.15c, less ton 19.80c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.45c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 15.25c per lb contained silicon. Packed, c.l. 17.25c, ton lot 19.05c; less ton 20.4c. Delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 16.4c per lb of contained Si. Packed, c.l. 18.30c, ton lot 19.95c, less ton 21.2c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Contract, carload, lump, bulk, 19.5c per lb of contained Si. Packed, c.l. 21.15c, ton lot 22.55c, less ton 23.6c. Delivered. Spot, add 0.25c.

Silicon Metal: (98% min Si, 0.75% max Fe, 0.07% max Ca). C.l. lump, bulk, 22.00c per lb of Si. Packed, c.l. 23.65c, ton lot 24.95c, less ton 25.95c. Add 0.5c for max 0.03% Ca grade. Deduct 0.5c for max 1% Fe grade analyzing min 99.75% Si; 0.75c for max 1.25% Fe grades analyzing min 96.75% Si. Spot, add 0.25c.

Alsifer: (Approx 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 10.65c per lb of alloy; ton lot, packed, 11.8c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, C 0.20% max). Contract, c.l., lump, bulk 9.25c per lb of alloy. Packed, c.l. 10.45c, ton lot 11.6c, less ton 12.45c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 27.25c per lb of alloy, ton lot 28.4c, less ton 29.65c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy; less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 85c per lb; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). Carload, bulk, lump, or 3" x D, $5.25 per lb of contained B. Packed, carload $5.40, ton to c.l. $5.50, less ton $5.60. Delivered.

Bortam: (B 1.5-1.9%). Ton lot, 45c per lb; less than ton lot, 50c per lb.

Carbortam: (B 1 to 2%). Contract, lump, carload 9.50c per lb f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 23c per lb of alloy, carload packed 24.25c, ton lot 26.15c, less ton 27.15c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.5-3%). Contract, carload, lump, bulk 24c per lb of alloy, carload packed 25.65c, ton lot 27.95c, less ton 29.45c. Delivered. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx 3⅛ lb each and containing 2 lb of Cr). Contract, carload, bulk 19.60c per lb of briquet, carload packed in box pallets 19.80c, in bags 20.70c; 3000 lb to c.l. in box pallets 21.00c; 2000 lb to c.l. in bags, 21.90c; less than 2000 lb in bags 22.80c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx 5 lb and containing 2 lb of Mn). Contract, carload, bulk 14.8c per lb of briquet; c.l., packed, pallets 15c, bags 16c; 3000 lb to c.l., pallets 16.2c; 2000 lb to c.l., bags, 17.2c; less ton 18.1c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx 3½ lb and containing 2 lb of Mn and approx ½ lb of Si). Contract, c.l. bulk 15.1c per lb of briquet; c.l. packed, pallets, 15.3c; bags 16.3c. 3000 lb to c.l., pallets, 16.5c; 2000 lb to c.l., bags 17.5c; less ton 18.4c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx 5 lb and containing 2 lb of Si). Contract, carload, bulk 7.7c per lb of briquet; packed, pallets, 7.9c; bags 8.9c; 3000 lb to c.l., pallets 9.5c; 2000 lb to c.l., bags 10.5c; less ton 11.4c. Delivered. Spot, add 0.25c; (Small size—weighing approx 2½ lb and containing 1 lb of Si.) Carload, bulk 7.85c. Packed, pallets 8.05c; bags 9.05c; 3000 lb to c.l., pallets 9.65c; 2000 lb to c.l., bags, 10.65c; less ton 11.55c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each). $1.41 per pound of Mo contained, f.o.b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%). 5000 lb W or more, $2.15 per lb of contained W. Delivered.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Si 8% max, C 0.4% max). Ton lots 2" x D, $4.25 per lb of contained Cb; less ton lots, $4.30. Delivered.

Ferrotantalum—Columbium: (Cb 40% approx, Ta 20% approx, and Cb plus Ta 60% min, C 0.30% max). Ton lot 2" x D, $3.70 per lb of contained Cb plus Ta, delivered; less ton lot $3.75.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5.7%, Fe 20% approx). Contract, c.l. packed ½-in. x 12 M 20.00c per lb of alloy, ton lot 21.15c, less ton 22.40c. Delivered. Spot, add 0.25c.

Graphidox No. 5: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 19c per lb of alloy, ton lot 20.15c; less ton lot 21.4c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 18.1c per lb of alloy; ton lot 19.55c; less ton lot 20.8c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx 20% each Si, Mn, Al; bal Fe). Lump, carload, bulk 18.50c. Packed c.l. 19.50c, 2000 lb to c.l. 20.50c, less than 2000 lb 21c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $4 for each 1% of P above or below the base); carload, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $110 per gross ton.

Ferromolybdenum: (55-75%). Per lb of contained Mo, in 200-lb container, f.o.b. Langeloth and Washington, Pa. $1.68 in all sizes except powdered which is $1.74.

Technical Molybdic-Oxide: Per lb of contained Mo, in cans, $1.39; in bags, $1.38, f.o.b. Langeloth and Washington, Pa.

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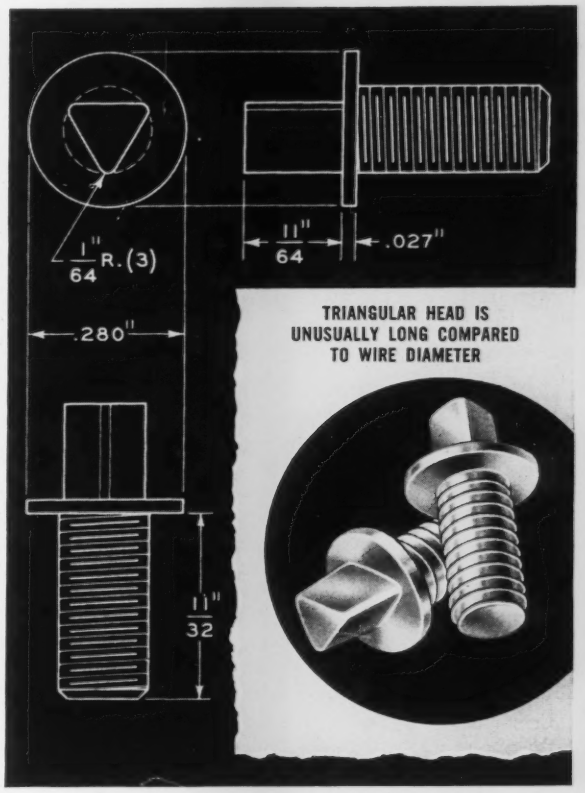

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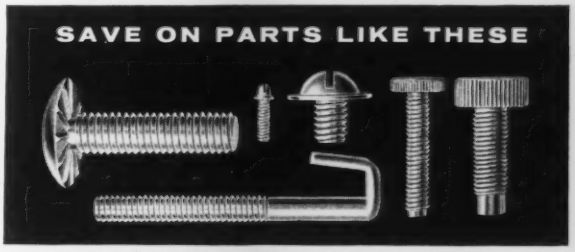

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Slow Demand Pushes Scrap Down

STEEL's composite on the prime grade slips to $36.33, off another 50 cents. Steel mill interest in offerings lags, but foundry buying of cast grades is moderately active

Scrap Prices, Page 170

Philadelphia—Domestic demand for steel scrap is listless. Were it not for moderate export inquiry—one cargo is loading here and another is scheduled for later this month — prices on the leading grades would be lower.

Domestic prices on all the steel grades are unchanged except some borings and turnings items, which are nominally lower. Mixed borings and turnings and machine shop turnings are lower at $18.50, delivered, and short shoveling turnings are off $2, hitting $21. There has been no important consumer buying in these grades for some time, but sellers are making lower offerings.

Principal strength in the scrap market appears in the cast grades. Heavy breakable is quoted higher at $44, delivered.

Chicago—Several leading grades of open-hearth scrap are down $1 to $2 a ton in new mill sales. The market is listless. The bearish trend results from a continued shrinking of steelmaking operations, which last week hit a low point so far this year at 55 per cent of capacity. The mills now have just about given up hope for an upturn in the second quarter. They are buying melting material only for current needs and are spacing acquisitions and limiting tonnage so as not to stir up the market.

New York — Brokers' buying prices on steel scrap are unchanged, but quotations are purely nominal on most grades of borings and turnings. The trend in cast scrap is mixed, with prices on unstripped motor blocks off to $28-$29, and on heavy breakable up at $34-$35. Stainless scrap prices are steady.

Cleveland—With steel mill operations at 35 per cent of capacity in this area and 47 per cent in Youngstown, scrap is moving at a slow pace. Quoted prices are nominal in the absence of representative buying. The tone of the market appears weaker compared with what it was a month ago.

Cincinnati—Brokers are still filling first-of-the-month orders, but the tone of the market is weaker. No. 1 cupola cast has moved back $1 to $39-$40. Area foundries have been struck, leaving brokers without a market for the foundry grades.

Pittsburgh—The market is weaker. Steel mills show no signs of increasing purchases in early second quarter. One steelmaker is buying No. 2 bundles at $29, forcing the price of that grade down $1.

The same firm is attempting to buy No. 1 heavy melting at $35—$2 under the present quotation—but there have been no buys at that figure. The leading grade was bought at $37 by one Pittsburgh area mill in the most recent purchase.

Prices on railroad scrap are off, being $1 to $2 a ton below last

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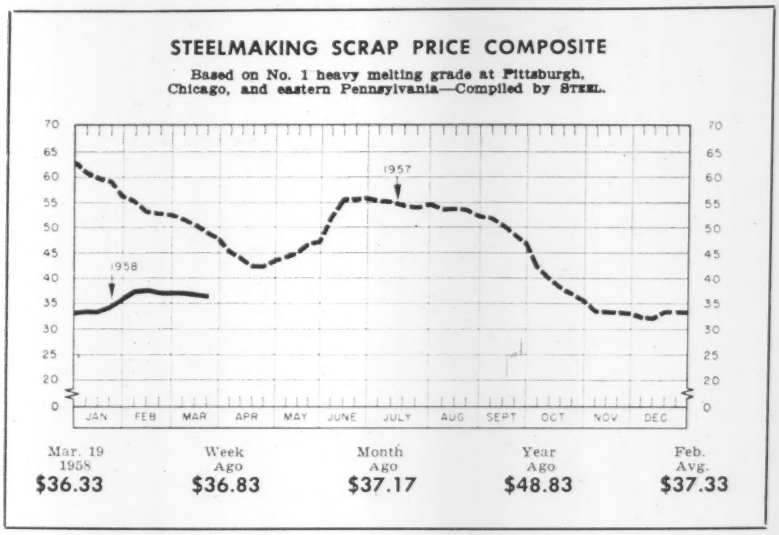

STEELMAKING SCRAP PRICE COMPOSITE
Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania—Compiled by STEEL.
1957
1958
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
Mar. 19 1958 $36.33
Week Ago $36.83
Month Ago $37.17
Year Ago $48.83
Feb. Avg. $37.33

week's quotations.

Washington — Consumption of ferrous materials (scrap and pig iron) totaled 8,280,000 gross tons in January, reports the U. S. Bureau of Mines. It was the smallest tonnage since August, 1954, exclusive of strike months.

The figure includes 49 per cent scrap (4,072,000 tons) and 51 per cent pig iron (4,208,000 tons), vs. 48 per cent scrap and 52 per cent iron in December.

Domestic stocks amounted to 11,368,000 tons on Jan. 31, of which 7,952,000 tons were scrap and 3,416,000 tons pig iron. The scrap total was off slightly from that of the preceding month; the pig iron total was up slightly.

Detroit—Scrap prices took a tumble here last week when Ford Motor Co. cleaned out its yards preparatory to closing down operations temporarily. Ford dropped between 12,000 and 15,000 tons of bundles on the lists which went for a reported $35 a ton.

There's still no mill activity in the market, and the industry doesn't expect any in the near future. Several brokers feel this will bring a further decline in prices.

Buffalo—The scrap market is depressed by the low rate of steel production in this district. The ingot rate is estimated at 36.5 per cent of capacity—unchanged from a week ago. Mill stocks are plentiful.

Mill scrap prices are unchanged. The only district mill that is taking in material is accepting limited tonnages against January prices, but it refuses to write new orders.

Youngstown — Lower prices are anticipated by some market observers here. No new sales are reported, and steelmaking operations continue depressed. Last week the district ingot rate fell 5 points to 47 per cent of capacity.

Houston—Scrap market prospects for the rest of this month are not encouraging. There is practically no consumer buying because steel mill operations are depressed. The leading Texas mill is engaged at less than 50 per cent of capacity. A second Texas mill is operating one blast furnace and two open hearths.

Export demand is weak. Two cargoes are scheduled for loading at Gulf ports during the next two months, but material for them has been accumulated.

With country scrap beginning to move at a faster pace, lower prices are anticipated by consumers. Brokers' current prices are nominal.

St. Louis—Activity in the scrap market continues to decline, but listed prices are holding steady. A relatively small offering of railroad material is expected to reduce rail quotations and those on some melting grades.

Yard accumulations of country scrap are four to five times normal because of improving weather and lack of sales. Steel mills here have ground stocks averaging well over 60 days.

Birmingham — Scrap is moving more freely to the mills than it has at any time this year, but buying continues spotty. One foundry bought No. 1 cast at $1 above the price paid on the last representative sale. Most major cast buyers are not in the market. Exports continue quiet.

Los Angeles—The mills continue out of the scrap market. Prices remain soft, but no changes are noted.

Seattle—Anticipating stronger demand and higher prices in the months ahead, several local dealers recently advanced their offering prices for steel scrap $2 a ton. The move is expected to stimulate shipments from the interior.

Mill buyers show little concern over the dealers' action. They hold ample stocks. The export market continues quiet.

San Francisco—Most scrap dealers are marking time with demand at a standstill. Most sellers anticipate a modest upturn in business over the next month or so.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 159

Atlantic Steel Co., Atanlta, has reduced its price on new billet de-

(*Please turn to Page* 175)

WARD STEEL CO.
We specialize in
FINISHED STEEL BARS—TUBES—STRIP
PROMPT WAREHOUSE SERVICE ONLY
Most Complete Stock in America of
BLUE TEMPERED SPRING STEEL
We believe that the way to sell is to carry a stock which permits satisfying any reasonable warehouse demand.
87A Rindge Ave. Ext. Phone UN 4-2488
CAMBRIDGE 40, MASS.
Branch:
3042-3058 W. 51st Street, CHICAGO, ILL.
Phone: Grovehill 6-2600

Iron and Steel Scrap

Consumer prices per gross ton, except as otherwise noted, including brokers' commission, as reported to STEEL, Mar. 19, 1958. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

Mar. 19	$36.33
Mar. 12	36.83
Feb. Avg.	37.33
Mar. 1957	49.63
Mar. 1953	44.05

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania.

PITTSBURGH

No. 1 heavy melting	36.00-37.00
No. 2 heavy melting	*32.00-33.00*
No. 1 dealer bundles	36.00-37.00
No. 2 bundles	*28.00-29.00*
No. 1 busheling	36.00-37.00
No. 1 factory bundles	41.00-42.00
Machine shop turnings	17.00-18.00
Mixed borings, turnings	17.00-18.00
Short shovel turnings	21.00-22.00
Cast iron borings	21.00-22.00
Cut structurals:	
2 ft and under	41.00-42.00
3 ft lengths	40.00-41.00
Heavy turnings	*33.00-34.00*
Punchings & plate scrap	40.00-41.00
Electric furnace bundles	40.00-41.00

Cast Iron Grades

No. 1 cupola	40.00-41.00
Stove plate	40.00-41.00
Unstripped motor blocks	26.00-27.00
Clean auto cast	42.00-43.00
Drop broken machinery	49.00-50.00

Railroad Scrap

No. 1 R.R. heavy melt.	*40.00-41.00*
Rails, 2 ft and under	*55.00-56.00*
Rails, 18 in. and under	*56.00-57.00*
Angles, splice bars	*49.00-50.00*
Rails, rerolling	60.00-61.00

Stainless Steel Scrap

18-8 bundles & solids	165.00-175.00
18-8 turnings	85.00-90.00
430 bundles & solids	100.00-110.00
430 turnings	50.00-55.00

CHICAGO

No. 1 heavy melt., indus.	*34.00-35.00*
No. 1 hvy melt., dealer	*33.00-34.00*
No. 2 heavy melting	32.00-33.00
No. 1 factory bundles	*38.00-39.00*
No. 1 dealer bundles	35.00-36.00
No. 2 bundles	26.00-27.00
No. 1 busheling, indus.	*34.00-35.00*
No. 1 busheling, dealer	*33.00-34.00*
Machine shop turnings	20.00-21.00
Mixed borings, turnings	22.00-23.00
Short shovel turnings	22.00-23.00
Cast iron borings	22.00-23.00
Cut structurals, 3 ft	43.00-44.00
Punchings & plate scrap	44.00-45.00

Cast Iron Grades

No. 1 cupola	41.00-42.00
Stove plate	38.00-39.00
Unstripped motor blocks	32.00-33.00
Clean auto cast	48.00-49.00
Drop broken machinery	48.00-49.00

Railroad Scrap

No. 1 R.R. heavy melt.	*37.00-38.00*
R.R. malleable	53.00-54.00
Rails, 2 ft and under	54.00-55.00
Rails, 18 in. and under	55.00-56.00
Angles, splice bars	51.00-52.00
Axles	56.00-57.00
Rails, rerolling	*54.00-55.00*

Stainless Steel Scrap

18-8 bundles & solids	160.00-165.00
18-8 turnings	85.00-95.00
430 bundles & solids	90.00-100.00
430 turnngs	47.50-52.50

YOUNGSTOWN

No. 1 heavy melting	37.00-38.00
No. 2 heavy melting	25.00-26.00
No. 1 busheling	37.00-38.00
No. 1 bundles	37.00-38.00
No. 2 bundles	24.00-25.00
Machine shop turnings	13.00-14.00
Short shovel turnings	17.00-18.00
Cast iron borings	17.00-18.00
Low phos.	39.00-40.00
Electric furnace bundles	39.00-40.00

Railroad Scrap

No. 1 R.R. heavy melt.	41.00-42.00

CLEVELAND

No. 1 heavy melting	33.00-34.00
No. 2 heavy melting	21.00-22.00
No. 1 factory bundles	37.00-38.00
No. 1 bundles	32.50-33.50
No. 2 bundles	23.00-24.00
No. 1 busheling	33.00-34.00
Machine shop turnings	11.00-12.00
Short shovel turnings	15.00-16.00
Mixed borings, turnings	15.00-16.00
Cast iron borings	15.00-16.00
Cut foundry steel	37.00-38.00
Cut structurals, plates 2 ft and under	44.00-45.00
Low phos. punchings & plate	35.00-36.00
Alloy free, short shovel turnings	19.00-20.00
Electric furnace bundles	34.50-35.50

Cast Iron Grades

No. 1 cupola	44.00-45.00
Charging box cast	36.00-37.00
Heavy breakable cast	36.00-37.00
Stove plate	43.00-44.00
Unstripped motor blocks	26.00-27.00
Brake shoes	34.00-35.00
Clean auto cast	45.00-46.00
Burnt cast	33.00-34.00
Drop broken machinery	48.00-49.00

Railroad Scrap

R.R. malleable	60.00-61.00
Rails, 2 ft and under	57.00-58.00
Rails, 18 in. and under	58.00-59.00
Rails, random lengths	50.00-51.00
Cast steel	47.00-48.00
Railroad specialties	51.00-52.00
Uncut tires	41.00-42.00
Angles, splice bars	51.00-52.00
Rails, rerolling	56.00-57.00

Stainless Steel

(Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	160.00-165.00
18-8 turnings	90.00-95.00
430 clips, bundles, solids	75.00-80.00
430 turnings	40.00-50.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	33.00
No. 2 heavy melting	30.00
No. 1 bundles	33.00
No. 2 bundles	25.00
No. 1 busheling	33.00
Machine shop turnings	18.00
Short shovel turnings	20.00

Cast Iron Grades

No. 1 cupola	45.00
Charging box cast	33.00
Heavy breakable cast	33.00
Unstripped motor blocks	33.00
Clean auto cast	45.00
Stove plate	41.00

Railroad Scrap

No. 1 R.R. heavy melt.	38.00
Rails, 18 in. and under	56.00
Rails, random lengths	50.00
Rails, rerolling	56.00
Angles, splice bars	49.00

BIRMINGHAM

No. 1 heavy melting	33.00-34.00
No. 2 heavy melting	29.00-30.00
No. 1 bundles	33.00-34.00
No. 2 bundles	22.00-23.00
No. 1 busheling	33.00-34.00
Cast iron borings	12.00-13.00
Machine shop turnings	24.00-25.00
Short shovel turnings	25.00-26.00
Bar crops and plates	40.00-41.00
Structurals & plates	38.00-39.00
Electric furnace bundles	37.00-38.00
Electric furnace:	
2 ft and under	37.00-38.00
3 ft and under	36.00-37.00

Cast Iron Grades

No. 1 cupola	*51.00-52.00*
Stove plate	49.00-50.00
Unstripped motor blocks	40.00-41.00
Charging box cast	22.00-23.00
No. 1 wheels	*38.00-39.00*

Railroad Scrap

No. 1 R.R. heavy melt.	36.00-37.00
Rails, 18 in. and under	49.00-50.00
Rails, rerolling	52.00-53.00
Rails, random lengths	45.00-46.00
Angles splice bars	43.00-44.00

PHILADELPHIA

No. 1 heavy melting	38.50
No. 2 heavy melting	35.00
No. 1 bundles	38.50
No. 2 bundles	28.00
No. 1 busheling	38.50
Electric furnace bundles	40.00
Mixed borings, turnings	*18.50†*
Short shovel turnings	*21.00†*
Machine shop turnings	*18.50†*
Heavy turnings	34.00†
Structurals & plate	43.00-44.00
Couplers, springs, wheels	46.00
Rail crops, 2 ft & under	59.00-60.00

Cast Iron Grades

No. 1 cupola	40.00
Heavy breakable cast	*44.00*
Malleable	62.00
Drop broken machinery	50.00

†Nominal

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	33.00-34.00
No. 2 heavy melting	29.00-30.00
No. 1 bundles	33.00-34.00
No. 2 bundles	22.00-23.00
Machine shop turnings	11.00-12.00†
Mixed borings, turnings	12.00-13.00†
Short shovel turnings	14.00-15.00†
Low phos. (structurals & plates	Nominal

Cast Iron Grades

No. 1 cupola	35.00-36.00
Unstripped motor blocks	*28.00-29.00*
Heavy breakable	*34.00-35.00*

Stainless Steel

18-8 sheets, clips, solids	155.00-160.00
18-8 borings, turnings	*60.00-65.00*
410 sheets, clips, solids	60.00-65.00
430 sheets, clips, solids	75.00-80.00

†Nominal

BUFFALO

No. 1 heavy melting	28.00-29.00
No. 2 heavy melting	25.00-26.00
No. 1 bundles	28.00-29.00
No. 2 bundles	23.00-24.00
No. 1 busheling	28.00-29.00
Mixed borings, turnings	14.00-15.00
Machine shop turnings	12.00-13.00
Short shovel turnings	15.00-16.00
Cast iron borings	14.00-15.00
Low phos. structurals and plate, 5 ft and under	33.00-34.00
2 ft and under	37.00-38.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	42.00-43.00
No. 1 machinery	47.00-48.00

Railroad Scrap

Rails, random lengths	47.00-48.00
Rails, 3 ft and under	53.00-54.00
Railroad specialties	37.00-38.00

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	32.00-33.00
No. 2 heavy melting	28.50-29.50
No. 1 bundles	32.00-33.00
No. 2 bundles	24.00-25.00
No. 1 busheling	32.00-33.00
Machine shop turnings	15.00-16.00
Mixed borings, turnings	16.00-17.00
Short shovel turnings	19.00-20.00
Cast iron borings	15.00-16.00
Low phos. 18 in.	40.00-41.00

Cast Iron Grades

No. 1 cupola	*39.00-40.00*
Heavy breakable cast	33.00-34.00
Charging box cast	33.00-34.00
Drop broken machinery	47.00-48.00

Railroad Scrap

No. 1 R.R. heavy melt.	36.00-37.00
Rails, 18 in. and under	54.00-55.00
Rails, random lengths	44.00-45.00

HOUSTON

(Brokers' buying prices; f.o.b. cars)

No. 1 heavy melting	37.00*
No. 2 heavy melting	34.00*
No. 2 bundles	26.00*
Crushed turnings	23.00*
Machine shop turnings	19.50-20.00*
Low phos. plates, structurals	40.00-41.00*

Cast Iron Grades

No. 1 cupola	40.00-41.00
Heavy breakable	30.00-31.00*
Unstripped motor blocks	30.00-32.00*

Railroad Scrap

No. 1 R.R. heavy melt.	*37.00*

*Nominal

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	30.00
No. 2 heavy melting	22.00
No. 1 bundles	29.00
No. 2 bundles	17.00
No. 1 busheling	29.00
Machine shop turnings	9.50-10.00†
Mixed borings, turnings	9.50-10.00
Short shovel turnings	11.00-11.50†
No. 1 cast	29.00-30.00
Mixed cupola cast	28.00-29.00
No. 1 machinery cast	35.00-36.00

†Nominal

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*28.00-29.00*
No. 2 heavy melting	*23.00-24.00*
No. 1 bundles	*29.00-30.00*
No. 2 bundles	20.00-21.00
No. 1 busheling	*28.00-29.00*
Machine shop turnings	*9.00-10.00*
Mixed borings, turnings	*10.00-11.00*
Short shovel turnings	*11.00-12.00*
Punchings & plate	*29.00-30.00*

Cast Iron Grades

No. 1 cupola	37.00-38.00
Stove Plate	31.00-32.00
Charging box cast	29.00-30.00
Heavy breakable	31.00-32.00
Unstripped motor blocks	21.00-22.00
Clean auto cast	39.00-40.00

SEATTLE

No. 1 heavy melting	30.00
No. 2 heavy melting	28.00
No. 1 bundles	24.00
No. 2 bundles	23.00
Machine shop turning	16.00
Mixed borings, turnings	16.00
Electric furnace No. 1	38.00

Cast Iron Grades

No. 1 cupola	31.00
Heavy breakable cast	28.00
Unstripped motor blocks	23.00
Stove plate (f.o.b. plant)	21.00

LOS ANGELES

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	28.00
No. 2 bundles	20.00
Machine shop turnings	9.00
Shoveling turnings	11.00
Cast iron borings	10.00
Cut structurals and plate 1 ft and under	43.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	38.00

Railroad Scrap

No. 1 R.R. heavy melt.	32.00

SAN FRANCISCO

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	30.00
No. 2 bundles	22.00
Machine shop turnings	15.00
Mixed borings, turnings	15.00
Cast iron borings	15.00
Heavy turnings	15.00
Short shovel turnings	15.00
Cut structurals, 3 ft	40.00

Cast Iron Grades

No. 1 cupola	40.00
Charging box cast	34.00
Stove plate	34.00
Heavy breakable cast	28.00
Unstripped motor blocks	31.00
Clean auto cast	40.00
Drop broken machinery	40.00
No. 1 wheels	34.00

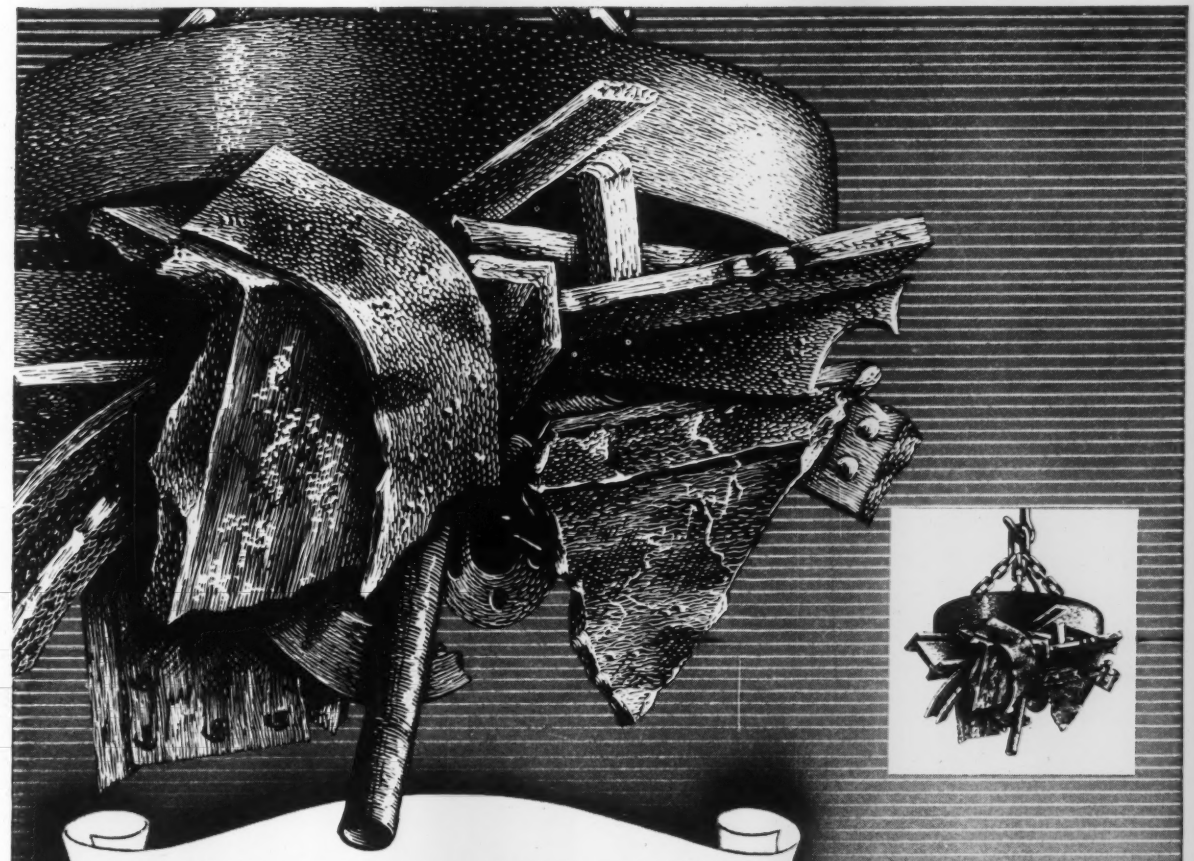
HAMILTON, ONT.

No. 1 heavy melting	32.00
No. 2 heavy melting	28.00
No. 1 bundles	32.00
No. 2 bundles	25.00
Mixed steel scrap	27.00
Mixed borings, turnings	17.00
Busheling, new factory:	
Prepared	32.00
Unprepared	26.00
Short steel turnings	21.00

Cast Iron Grades†

No. 1 machinery cast	45.00-50.00

†F.o.b. Hamilton, Ont.



A SYMBOL OF LEADERSHIP IN IRON & STEEL SCRAP SINCE 1889

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EXPORTS-IMPORTS **LIVINGSTON & SOUTHARD, INC.** 99 Park Ave., New York, N. Y. *Cable Address:* **FORENTRACO**

Plateau Quarter Expected

The downtrend has probably stopped, but metalmen don't foresee any major improvement before the third or fourth quarter. Look for greater price stability

Nonferrous Metal Prices, Pages 174 & 175

NONFERROUS SALES in the second quarter will hold close to first quarter levels. Consensus: Business may be a little better but any upturn will be slight.

The most encouraging factor is the industry's belief that the worst of the recession is over. Metalmen admit the nonferrous business may stay on a plateau for a while, but everyone looks for substantial improvement before the year is out.

Here's how the market shapes up for the next three months:

Copper — Producers are "cautiously optimistic" about a slight upturn, but it is based on hopes for an over-all pickup in the economy. It's believed any increase in business will result in more copper orders since customer inventories are virtually nonexistent.

Supply and demand will come closer into balance as production cutbacks begin to be felt more. February statistics, however, weren't too encouraging. As reported by the Copper Institute, U. S. refined production fell from 136,748 tons in January to 128,299 tons. Domestic deliveries to fabricators dropped almost 17,000 tons to the 93,784-ton mark, boosting producers' stocks to 201,223 tons.

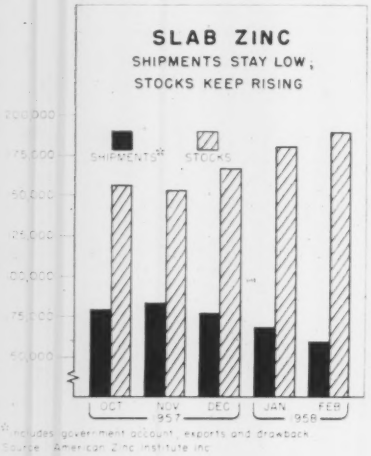
Custom smelters have seen a business upturn lately. If it continues, they'll boost their price above the present 23 cents a pound. That, along with some strengthening on the London Metal Exchange, makes the primary price firmer. But many people in the trade believe primary producers will eventually have to come below 25 cents.

Look for fewer price fluctuations in copper during the second quarter.

Lead, Zinc — "It's hard to see farther ahead than the next day," is the way one producer sums up the erratic demand for both metals. Most metalmen believe that the second quarter will bring a mild seasonal upturn.

Lead shipments to battery, tetraethyl lead, and solder makers are expected to pick up. Demand for construction lead is improving.

Zinc sales to galvanizers should



stay up. Diecasters and brass mills will remain fairly quiet.

Look for the government to approve higher lead and zinc tariffs. But the move shapes up as a mixed blessing since Uncle Sam will undoubtedly stop stockpile purchases.

Aluminum—The incoming order rate is at the February level. Second quarter sales forecasts range from "about the same" to "10 per cent better." Most promising areas are highway construction, housing starts, foil, and chemical uses.

Customer inventories have practically disappeared. Says one producer: "Orders are now equal to consumption instead of below. We were mistaken in believing a large part of customer metal needs was coming from stock."

Nickel—Customer inventories will be depleted even more in the second quarter as buyers continue to fill part of their requirements from stock. Producers feel inventories are getting so low that some buyers will have to come into the market for more metal to satisfy new orders. It should mean a slightly better quarter for nickel.

But demand will remain under production. This has caused International Nickel Co. of Canada Ltd. to trim output by 2.5 million lb a month. "Unless business shows a quick upturn, a further cutback in production may be necessary," the company says.

No change in price is expected.

Titanium — Mill product shipments should hold around the 400,000 lb a month level of the first quarter. Producers don't see things getting worse—in fact, they believe the low point was reached in November and December.

Producers believe any titanium fabrication will turn into orders for them since customer inventories are virtually cleaned out. Pickups in aircraft and missile orders offer the most promise for an upturn.

In the second half, the Business & Defense Services Administration estimates mill products shipments will average 500,000 to 600,000 lb monthly.

NONFERROUS PRICE RECORD

	Mar. 19 Price	Last Change	Previous Price	Feb. Avg	Jan. Avg	Mar., 1957 Avg
Aluminum	26.00	Aug. 1, 1957	25.00	26.000	26.000	25.000
Copper	23.00-25.00	Feb. 26, 1958	23.125-25.00	24.298	25.135	31.462
Lead	12.80	Dec. 2, 1957	13.30	12.800	12.800	15.800
Magnesium	35.25	Aug. 13, 1956	33.75	35.250	35.250	35.250
Nickel	74.00	Dec. 6, 1956	64.50	74.000	74.000	74.000
Tin	94.50	Mar. 19, 1958	93.625	93.818	92.933	99.683
Zinc	10.00	July 1, 1957	10.50	10.000	10.000	13.500

Quotations in cents per pound based on: COPPER, mean of primary and secondary, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary pig, 99.5+%, f.o.b. shipping point; MAGNESIUM, pig, 99.8%, Velasco, Tex.

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Enclosed freight car loading of kegs and cartons containing many different kinds of fasteners. If you prefer truck shipment, Lamson has a 10-truck enclosed loading dock, too.

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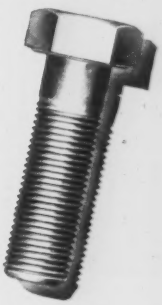
As manufacturers of *the most complete line* in the bolt and nut industry, chances are we can fill your order from stock *right now!* Try us and see.



The LAMSON & SESSIONS Co.

5000 TIEDEMAN ROAD, CLEVELAND 9, OHIO • PLANTS AT CLEVELAND AND KENT, OHIO • CHICAGO • BIRMINGHAM

Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99.5%, pigs, 26.00; ingots, 28.10, 10,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 29.90; No. 43, 29.70; No. 195, 31.30; No. 241, 31.50; No. 356, 29.90, 30-lb ingots.

Antimony: R.M.M. brand, 99.5%, 29.00; Lone Star brand, 29.50, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 23.50-24.50, New York, duty paid, 10,000 lb or more.

Beryllium: 97% lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

Beryllium Copper: 3.75-4.25% Be, $43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

Bismuth: $2.25 per ton, ton lots.

Cadmium: Sticks and bars, $1.55 per lb deld.

Cobalt: 97-99%, $2.00 per lb for 550-lb keg; $2.02 per lb for 100 lb case; $2.07 per lb under 100 lb.

Columbium: Powder, $55-90 per lb, nom.

Copper: Electrolytic, 25.00 deld.; custom smelters, 23.00; lake, 25.00 deld.; fire refined, 24.75 deld.

Germanium: First reduction, $179.17-197.31 per lb; intrinsic grade, $197.31-220 per lb, depending on quantity.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $70-90 nom. per troy oz.

Lead: Common, 12.80; chemical, 12.90; corroding, 12.90, St. Louis, New York basis, add 0.20.

Lithium: 98 + %, 50-100 lb. cups or ingots, $12; rod, $15; shot or wire, $16. 100-500 lb, cups or ingots, $10.50; rod, $14; shot or wire, $15, f.o.b. Minneapolis.

Magnesium: Pig, 35.25; ingot, 36.00 f.o.b. Velasco, Tex.; 12 in. thick, 59.00 f.o.b. Madison, Ill.

Magnesium Alloys: AZ91A (diecasting), 40.75 deld.; AZ63A, AZ92A, AZ91C (sand casting), 40.75, f.o.b. Velasco, Tex.

Mercury: Open market, spot, New York, $232-237 per 76-lb flask.

Molybdenum: Unalloyed, turned extrusions, 3.75-5.75 in. round, $9.60 per lb in lots of 2500 lb or more, f.o.b. Detroit.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot for addition to cast iron, 74.50; "F" nickel, 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 1.01. Nickel oxide sinter, 71.25 per lb of nickel content before 1 cent freight allowance, f.o.b. Copper Cliff, Ont.

Osmium: $70-100 per troy oz nom.

Palladium: $19-21 per troy oz.

Platinum: $72-75 per troy oz from refineries.

Radium: $16-21.50 per mg radium content, depending on quantity.

Rhodium: $118-125 per troy oz.

Ruthenium: $45-55 per troy oz.

Selenium: $7.00 per lb, commercial grade.

Silver: Open market, 88.625 per troy oz.

Sodium: 16.50, c.l.; 17.00 l.c.l.

Tantalum: Rod, $60 per lb; sheet, $55 per lb.

Tellurium: $1.65-1.85 per lb.

Thallium: $7.50 per lb.

Tin: Straits, N. Y., spot and prompt, 93.625.

Titanium: Sponge, 99.3 + %, grade A-1 ductile (0.3% Fe max.), $2.25; grade A-2 (0.5% Fe max.), $2.00 per lb.

Tungsten: Powder, 98.8%, carbon reduced. 1000-lb lots, $3.15 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99 + % hydrogen reduced, $3.85.

Zinc: Prime Western, 10.00; brass special, 10.25; intermediate, 10.50, East St. Louis, freight allowed over 0.50 per lb, New York basis, add 0.50. High grade, 11.35; special high grade, 11.75 deld. Diecasting alloy ingot No. 3, 14.25; No. 2, 15.25; No. 5, 14.75 deld.

Zirconium: Sponge, commercial grade, $5-10 per lb.

(Note: Chromium, manganese, and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 23.00-25.50; No. 12 foundry alloy (No. 2 grade), 21.00-21.25; 5% silicon alloy, 0.60 Cu max., 25.00; 13 alloy, 0.60 Cu max., 25.00; 195 alloy, 24.00-25.75; 108 alloy, 21.50. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 23.00; grade 2, 21.25; grade 3, 20.00; grade 4, 18.00.

Brass Ingot: Red brass, No. 115, 24.75; tin bronze, No. 225, 33.50; No. 245, 28.25; high-leaded tin bronze, No. 305, 28.75; No. 1 yellow, No. 405, 20.25; manganese bronze, No. 421, 22.50.

Magnesium Alloy Ingot: AZ63A, 37.50; AZ91B, 37.50; AZ91C, 41.25; AZ92A, 37.50.

NONFERROUS PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, $1.80, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, $1.78, f.o.b. Temple, Pa.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 30,000-lb lots, 30.355; l.c.l., 30.98. Weatherproof, 30,000-lb lots, 32.53; l.c.l., 33.28. Magnet wire deld., 38.43, before quantity discounts.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, $18.50 per cwt; pipe, full coils, $18.50 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheets and strip, $9.50-15.95; sheared mill plate, $8.00-11.50; wire, $7.50-11.50; forging billets, $6.00-7.60; hot-rolled and forged bars, $6.15-7.90.

ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, 24.00; plate, $12.50-19.20; H.R. strip, $12.50-22.90; $11.00-17.40.

ZIRCONIUM

C.R. strip, $15.00-31.25; forged or H.R. bars, ribbon zinc in coils, 20.50; plates, 19.00.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R.	126	106	128
Strips, C.R.	124	108	138
Plate, H.R.	120	105	121
Rod, Shapes, H.R.	107	89	109
Seamless Tubes	157	129	200

ALUMINUM

Sheets: 1100 and 3003 mill finish (30,000 lb base; freight allowed).

Thickness Range Inches	Flat Sheet	Coiled Sheet
0.249-0.136	43.10-47.60	.....
0.135-0.096	43.60-48.70	40.50-41.10
0.095-0.077	44.30-50.50	40.60-41.30
0.076-0.061	44.90-52.80	40.80-42.00
0.060-0.048	45.60-55.10	41.40-43.10
0.047-0.038	46.20-57.90	41.90-44.50
0.037-0.030	46.60-62.90	42.30-46.30
0.029-0.024	47.20-54.70	42.60-47.00
0.023-0.019	48.20-58.10	43.70-45.40
0.018-0.017	49.00-55.40	44.30-46.00
0.016-0.015	49.90-56.30	45.10-46.80
0.014	50.90	46.10-47.80
0.013-0.012	52.10	46.80
0.011	53.10	48.00
0.010-0.0095	54.60	49.40
0.009-0.0085	55.90	50.90
0.008-0.0075	57.50	52.10
0.007	59.00	53.60
0.006	60.60	55.00

ALUMINUM (continued)

Plates and Circles: Thickness 0.250-3 in., 24-60 in. width or diam., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	42.70	47.50
5050-F	43.80	48.60
3004-F	44.80	50.50
5052-F	44.40	51.20
6061-T6	46.90	53.00
2024-T4	50.60	57.40
7075-T6*	58.40	66.00

*24-48 in. width or diam., 72-180 in. lengths.

Screw Machine Stock: 30,000 lb base.

Diam.(in.)or across flats	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
Drawn				
0.125	78.20	75.20	....	....
0.156-0.172	66.20	63.40	....	....
0.188	66.20	63.40	....	81.60
0.219-0.234	63.00	61.50	....	....
0.250-0.281	63.00	61.50	....	77.90
0.313	63.00	61.50	....	74.20
0.344	62.50	....	....	....
Cold-Finished				
0.375-0.547	62.50	61.30	74.80	69.80
0.563-0.688	62.50	61.30	71.10	65.50
0.719-1.000	61.00	59.70	64.90	61.70
1.063	61.00	59.70	....	59.60
1.125-1.500	58.60	57.40	62.80	59.60
Rolled				
1.563	57.00	55.70	....	....
1.625-2.000	56.30	54.90	....	57.50
2.125-2.500	54.80	53.40	....	....
2.563-3.375	53.20	51.70	....	....

Forging Stock: Round, Class 1, random lengths: 2014-F, 46.90-53.90, diam. 1-8 in.; 6061-F, 43.50-53.90, diam. 1-6 in.; 7075-F, 63.50-73.90, diam. 1-3.875 in.; 7079-F, 68.50-78.90, diam. 1-3.875 in.

Pipe: ASA schedule 40, alloy 6063-T6, standard lengths, plain ends, 90,000-lb base, per 100 ft.

Nom. Pipe Size (in.)		Nom. Pipe Size (in.)	
¾	$19.40	2	$ 59.90
1	30.50	4	165.05
1¼	41.30	6	296.10
1½	49.40	8	445.55

Extruded Solid Shapes:

Factor	Alloy 6063-T5	Alloy 6062-T6
9-11	45.40-47.00	60.60-64.80
12-14	45.70-47.20	61.30-65.80
15-17	45.90-47.90	62.50-67.50
18-20	46.50-48.30	64.50-70.10

MAGNESIUM

Sheet and Plate: AZ31B standard grade, 0.32 in., 103.10; .081 in., 77.90; .125 in., 70.40; .188 in., 69.00; .250-2.0 in., 67.90. AZ31B spec. grade, .032 in., 171.30; .081 in., 108.70; .125 in., 98.10; .188 in., 95.70; .250-2.00 in., 93.30. Tread plate, 60-192 in. lengths, 24-72 in. widths; .125 in., 74.90; .188 in., 71.70-72.70; .25-.75 in., 70.60-71.60. Tooling plate, .25-3.0 in., 73.00.

Extruded Solid Shapes:

Factor	Com. Grade (AZ31C)	Spec. Grade (AZ31B)
6-8	69.60-72.40	84.60-87.40
12-14	70.70-73.00	85.70-88.00
24-26	75.60-76.30	90.60-91.30
36-38	89.20-90.30	104.20-105.30

NONFERROUS SCRAP

DEALER'S BUYING PRICES

(Cents per pound, New York, in ton lots.)
Aluminum: 1100 clippings, 13.00-13.50; old sheets, 10.00-10.50; borings and turnings, 6.50-

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES f		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tubes	Clean Heavy	Rod Ends	Clean Turnings
Copper	48.13b	45.36c	....	48.32	21.000	21.000	20.250
Yellow Brass	42.69	31.03d	43.23	45.60	16.125	15.875	14.500
Low Brass, 80%	44.90	44.84	45.44	47.71	17.875	17.625	17.125
Red Brass, 85%	45.67	45.61	46.21	48.48	18.625	18.375	17.875
Com. Bronze, 90%	46.98	46.92	47.52	49.54	19.250	19.000	18.500
Manganese Bronze	50.81	44.91	55.44	....	14.875	14.625	14.125
Muntz Metal	45.19	41.00	....	....	15.125	14.875	14.375
Naval Brass	47.07	41.38	54.13	50.48	14.875	14.625	14.125
Silicon Bronze	52.84	52.03	52.88	54.77	20.625	20.375	19.625
Nickel Silver, 10%	57.93	60.26	60.26	....	21.125	20.875	10.562
Phos. Bronze, A-5%	67.17	67.67	67.67	68.85	21.875	21.625	20.625

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, or any or all kinds of scrap, add 1 cent per lb.

7.00; crankcase, 10.00-10.50; industrial castings, 10.00-10.50.

Copper and Brass: No. 1 heavy copper and wire, 17.00-17.50; No. 2 heavy copper and wire, 15.00-15.50; light copper, 13.00-13.50; No. 1 composition red brass, 14.50-15.00; No. 1 composition turnings, 13.50-14.00; new brass clippings, 12.50-13.00; light brass, 8.50-9.00, heavy yellow brass, 10.00-10.50; new brass rod ends, 11.00-11.50; auto radiators, unsweated, 10.50-11.00; cocks and faucets, 12.00-12.50; brass pipe, 12.00-12.50.

Lead: Heavy, 8.50-9.00; battery plates, 3.50-3.75; linotype and stereotype, 10.50-11.00; electrotype, 9.50-10.00; mixed babbitt, 10.50-11.00.

Monel: Clippings, 28.00-29.00; old sheets, 25.00-26.00; turnings, 20.00-23.00; rods, 28.00-29.00.

Nickel: Sheets and clips, 42.00-45.00; rolled anodes, 42.00-45.00; turnings, 37.00-40.00; rod ends, 42.00-45.00.

Zinc: Old zinc, 3.00-3.25; new diecast scrap, 2.75-3.00; old diecast scrap, 1.50-1.75.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Aluminum: 1100 clippings, 16.25-16.50; 3003 clippings, 16.25-16.50; 6151 clippings, 15.75-16.50; 5052 clippings, 15.75-16.00; 2014 clippings, 15.25-16.00; 2017 clippings, 15.25-16.00; 2024 clippings, 15.25-16.00; mixed clippings, 14.75-15.00; old sheets, 12.25-12.50; old cast, 12.25-12.50; clean old cable (free of steel), 15.25-15.50; borings and turnings, 13.00-14.00.

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 51.00; light scrap, 46.00; turnings and borings, 31.00.

Copper and Brass: No. 1 heavy copper and wire, 19.00; No. 2 heavy copper and wire, 17.675; light copper, 15.125; refinery brass (60% copper) per dry copper content, 16.75.

INGOTMAKERS' BUYING PRICES

Copper and Brass: No. 1 heavy copper and wire, 19.00; No. 2 heavy copper and wire, 17.675; light copper, 15.125; No. 1 composition borings, 16.50; No. 1 composition solids, 17.00; heavy yellow brass solids, 11.50; yellow brass turnings, 10.50; radiators, 13.00.

PLATING MATERIALS

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, $1.70 per lb.

Copper: Flat-rolled, 41.79; oval, 40.00, 5000-10,000 lb; electrodeposited, 31.25, 2000-5000 lb lots; cast, 36.25, 5000-10.000 lb quantities.

Nickel: Depolarized, less than 100 lb, 114.25; 100-499 lb, 112.00; 500-4999 lb, 107.50; 5000-29,999 lb, 105.25; 30,000 lb, 103.00. Carbonized, deduct 3 cents a lb.

Tin: Bar or slab, less than 200 lb, 113.50; 200-499 lb, 112.00; 500-999 lb, 111.50; 1000 lb or more, 111.00.

Zinc: Balls, 16.00; flat tops, 16.00; flats, 19.25; ovals, 18.50, ton lots.

CHEMICALS

Cadmium Oxide: $1.70 per lb in 100-lb drums.
Chromic Acid: 100 lb, 33.30; 500 lb, 32.80; 2000 lb, 32.15; 5000 lb, 31.80; 10,000 lb, 31.30; f.o.b. Detroit.

Copper Cyanide: 100-200 lb, 68.40; 300-900 lb, 66.40; 1000-19,900 lb, 64.40.
Copper Sulphate: 100-1900 lb, 13.70; 2000-5900 lb, 11.70; 6000-11,900 lb, 11.45; 12,000-22,900 lb, 11.20; 23,000 lb or more, 10.70.

Nickel Chloride: 100 lb, 48.50; 200 lb, 46.50; 300 lb, 45.50; 400-9999 lb, 43.50; 10,000 lb or more, 40.50.

Nickel Sulphate: 5000-22,000 lb, 33.50; 23,000-35,900 lb, 33.00; 36,000 lb or more, 32.50.

Sodium Cyanide: 100 lb, 27.60; 200 lb, 25.90; 400 lb, 22.90; 1000 lb, 21.90; f.o.b. Detroit.

Sodium Stannate: Less than 100 lb, 75.80; 100-600 lb, 66.80; 700-1900 lb, 64.00; 2000-9900 lb, 62.20; 10,000 lb or more, 60.80.

Stannous Chloride (anhydrous): Less than 25 lb, 165.30; 25 lb, 130.30; 100 lb, 115.30; 400 lb, 112.90; 5200-19,600 lb, 100.70; 20,000 lb or more, 88.50.

Stannous Sulphate: Less than 50 lb, 128.10; 50 lb, 98.10; 100-1900 lb, 96.10; 2000 lb or more, 94.10.

Zinc Cyanide: 100-200 lb, 59.00; 300-900 lb, 57.00.

(*Concluded from Page 169*)

formed reinforcing bars $4 a ton. The new price, $5.425 per 100 lb, is in line with that quoted by other makers. It became effective Mar. 11.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

6500 tons, retractable roof dome, auditorium, Public Auditorium Authority of Pittsburgh and Allegheny County, Pittsburgh, to the American Bridge Div., U. S. Steel Corp., Pittsburgh.

5000 tons, alterations and repairs, Delair, Pa., bridge, Pennsylvania Railroad, over the Delaware River, to American Bridge Div., U. S. Steel Corp., Pittsburgh.

520 tons, three bridge superstructures, including two welded steel girder structures and one 2-span steel stringer, Westfield River, Cummington, Mass., to the Claymont Div., Colorado Fuel & Iron Corp., Claymont, Del.; Warner Bros. Inc., Sunderland, Mass., general contractor.

300 tons, estimated, Y.M.H.A. Center, Newark, N. J., to the Elizabeth Iron Works, Elizabeth, N. J.

165 tons, regional technical high school, Danielson, Conn., to the Standard Structural Steel Co., Hartford, Conn.; Central Engineering & Construction Div., Gilbane Building Co., Pawtucket, R. I., general contractor.

330 tons, wide flange, General Stores Supply Office, Navy, Philadelphia, to the Bethlehem Steel Co., Bethlehem, Pa.

315 tons, extension of state viaduct, Seattle, to the Pacific Car & Foundry Co., Seattle; Rumsey & Co. and Morrison-Knudsen Co., joint general contractors.

160 tons, shield test pool, Arco reactor plant, to the Western Steel Co., Salt Lake City, Utah; W. R. Cahoon Construction Co., Pocatello, Idaho, general contractor at $773,047.

130 tons, state highway bridge, Franconia, N. H., to the Bancroft & Martin Rolling Mills Co., South Portland, Maine; Peter Salvucci Co., Waltham, Mass., general contractor.

105 tons, high school, Arlington, Mass., to Groisser & Shlager Iron Works, Somerville, Mass.; Poorvu Construction Co. Inc., Wellesley, Mass., general contractor; 60 tons, bar joists, Macomber Inc., Canton, Ohio.

100 tons, structurals and bars, regional high school, Oak Bluffs, Martha's Vineyard, Mass., to the Groisser & Shlager Iron Works, Somerville, Mass. (structurals), and Plantations Steel Co., Providence, R. I., (bars); Ayres-Hagen-Booth Inc., Providence, general contractor.

100 tons, spillway gate hoists, for Rock Island Dam, to the Truax Machine & Tool Co., Seattle, at $32,058 by the Chelan County P.U.D., Wenatchee, Wash.

STRUCTURAL STEEL PENDING

4900 tons, state Cross Bronx Expressway, 58-2 Bronx County, New York, Slattery Construction Co., Maspeth, N. Y., low on general contract.

2390 tons, state bridge work, LR 30/6/, Perry and Dauphin Counties, Pennsylvania, bids Apr. 1; also, 1000 tons of reinforcing steel.

500 tons, including machinery, trash racks for Chandler powerplant, Yakima Project, Washington State; Bureau of Reclamation, Denver, will call bids about Mar. 28.

370 tons, also 30 tons of reinforcing, Washington State railway underpass, Pierce County; bids to Olympia, Wash., Apr. 1.

285 tons, also 30 tons of reinforcing, Washington State railway underpass, Chelan County; bids to Olympia, Wash., Apr. 1.

133 tons, Washington State, four highway bridges, Adams County; bids to Olympia, Wash., Apr. 1.

REINFORCING BARS . . .

REINFORCING BARS PLACED

645 tons, biological science building, University of Georgia, Athens, Ga., to the Fox Steel Co., Birmingham; H. W. Ivey Construction Co., Atlanta, general contractor; 45 tons of structurals to the Plowden Steel Co., Columbia, S. C.

580 tons, buildings, Sacred Heart Hospital, Chester, Pa., to the Concrete Steel Co., Philadelphia; James R. Farrell Inc., Philadelphia, general contractor.

500 tons or more, including structurals, post-office and courthouse, Kansas City, Kans., to the Mid-States Ornamental Iron Co., Kansas City; Universal Construction Co., Kansas City, general contractor.

500 tons, nine railroad grade crossing structures, Queens, N. Y., to the Bethlehem Steel Co., Bethlehem, Pa.; Horne Construction Co. Inc., Merrick, N. Y., general contractor; 2870 tons, fabricated structurals, to the American Bridge Div., U. S. Steel Corp., Pittsburgh.

300 tons, highway project, Washington State, Adams County, to the Bethlehem Pacific Coast Steel Corp., Seattle; Max Kuney Co., Spokane, Wash., general contractor.

270 tons, four state highway bridges, Cummington, Mass., to the Plantations Steel Co., Providence, R. I.; Warner Bros. Inc., Sunderland, Mass., general contractor.

165 tons, high school, Arlington, Mass., to Joseph T. Ryerson & Son Inc., Boston; Poorvu Construction Co. Inc., Wellesley, Mass., general contractor.

160 tons, sewage treatment plant, Whitmarsh Township, Pennsylvania; 50 tons for Contract 4 being placed through Salvo Contracting Co., Philadelphia, general contractor, to Concrete Steel Co., Philadelphia, and 110 tons for Contract 5 through William H. Gill, Lansdowne, Pa., general contractor, to American Steel Engineering Co., Philadelphia, 120 tons for Contract 3 still pending, with Tri-County Construction Co., Philadelphia, general contractor.

150 tons, additional work, Penn Center, Philadelphia, through McCloskey & Co., general contractor, to Bethlehem Steel Co., Bethlehem, Pa.

150 tons, regional technical high school, Danielson, Conn., to the U. S. Steel Supply Div., U. S. Steel Corp., Newark, N. J.; Central Engineering & Construction Div., Gilbane Building Co., Pawtucket, R. I., general contractor.

140 tons, Bell Telephone building, Penns Grove, N. J., to Concrete Steel Co., Philadelphia.

140 tons, classroom building, Worcester Polytechnical Institute, Worcester, Mass., to the

CLASSIFIED

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GENERAL FOUNDRY FOREMAN
For mechanized ferrous foundry in Midwest. Must be experienced in gating. Have knowledge of Standard Costs. Supervise all molding operations. Submit confidential resume. Write Box 646, STEEL, Penton Bldg., Cleveland 13, Ohio.

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College graduate, 34, white, desires position in Industrial Quality Control. Experienced in the casting of Aluminum, Copper and Brass. Able to set-up charge calculation system, establish both control and operating limits, etc. Possesses experience in supervising production personnel. Reply to Box 647, STEEL, Penton Bldg., Cleveland 13, Ohio.

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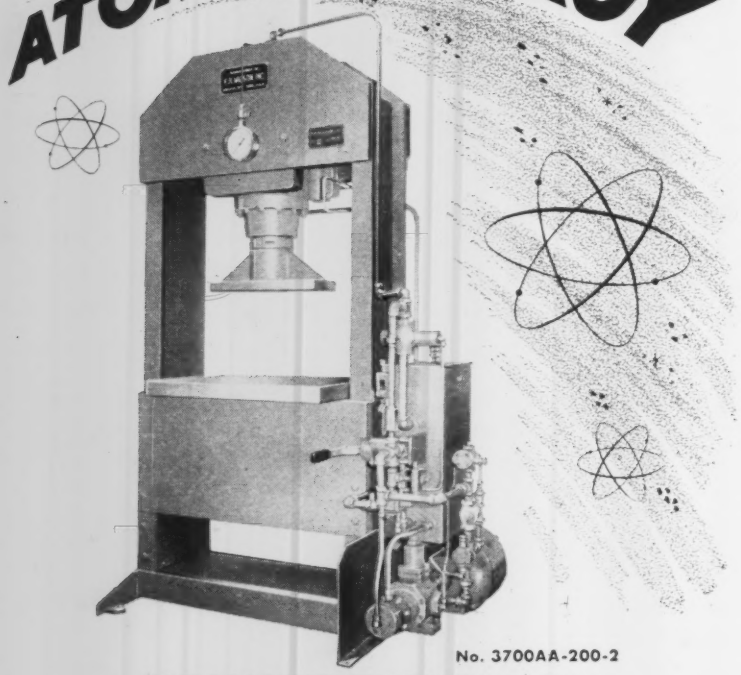

No. 3700AA-200-2

DRAMATIC EXAMPLE OF PRESS PROGRESS BY WILSON

Zirconium! . . . in this single word lies a story of remarkable press progress at K. R. Wilson. A press was needed for cutting and pressing zirconium, glistening metal vitally important in the construction of nuclear reactors for atomic energy. The problem was put to Wilson engineers. *The challenge was accepted and a press was built to do the job!* The K. R. Wilson 3700AA-200-2 200-Ton Capacity Motor Driven Hydraulic Press combines all the features necessary to cut and press zirconium with maximum efficiency and economy. The 3700AA-200-2 is but one of scores of examples of the years-ahead technical thinking that makes any type of Wilson press your wisest buy.

CONSIDER THE FEATURES AND YOU'LL CHOOSE WILSON
MODEL No. 3700AA-200-2

HEAVY DUTY RAM 6" diameter heat treated and ground alloy steel ram. 10" bore. 18" stroke.

DOUBLE ACTING CYLINDER Provides power on upstroke for stripping and to offset weight of tooling.

COMPLETE RAM CONTROL Stops in any position; allows you to raise just enough to clear work.

GUIDED RAM Non-rotating ram completely eliminates ram turning.

SIDE-MOUNTED HYDRAULIC UNIT Requires minimum amount of floor space; easily accessible for service.

RAM SPEEDS Rapid Idle Approach Speed to 23 tons, 52" per minute. Pressing Speed to 200 Tons, 8¾" per minute. Rapid Idle Return to 15 Tons, 75" per minute.

FOR FULL DETAILS WRITE FOR BULLETIN No. 37

HYDRAULICS DIVISION
K. R. WILSON, Inc.
OFFICES AND FACTORIES — 216 MAIN ST., ARCADE, NEW YORK, U.S.A.

Plantations Steel Co., Providence, R. I.; J. B. Lowell Co., Worcester, general contractor; 65 tons, fabricated structural steel to the Stafford Iron Works, Worcester.

140 tons, Snohomish County, Washington State, P.U.D. Center, Everett, Wash., to the Soule Steel Co., Seattle; Cawdrey & Vemo, Seattle, general contractor.

100 tons, forestry building, Yale University, New Haven, Conn., to Joseph T. Ryerson & Son Inc., Boston; Dwight Building Co., New Haven, general contractor.

REINFORCING BARS PENDING

1000 tons, state highway bridge work, LR 30/6/, Perry and Dauphin Counties, Pennsylvania; bids Apr. 11; also 2390 tons of structurals.

500 tons, also 20 tons of shapes, eight over and underpasses, Idaho State, Kootenai County; bids to Boise, Apr. 8.

250 tons, Washington State, highway bridges, Klickitat, Adams, and Whatcom counties; bids to Olympia, Wash., Apr. 1.

192 tons, Washington State, highway project, Adams County; bids to Olympia, Wash., Apr. 1.

160 tons, Montana State, highway bridges, Beaverhead, Roosevelt, Park, and Yellowstone counties; bids to Helena, Mont., Mar. 27.

140 tons, Washington State, highway bridges, Lincoln County; bids to Olympia, Wash., Apr. 1.

120 tons, Contract 3, sewage treatment plant, Whitmarsh Township, Pennsylvania Tri-County Construction Co., Philadelphia, general contractor.

100 tons plus, two 860-ft girder bridges, Lane County, Oregon; bids to the highway commission, Portland, Oreg., Mar. 28.

PLATES . . .

PLATES PLACED

685 tons, General Stores Supply Office, Navy, Philadelphia, to the Claymont Div., Colorado Fuel & Iron Corp., Claymont, Del.; also 355 tons of zinc-coated sheets, Weirton Steel Co., Weirton, W. Va.

390 tons, including 187 tons of alloys, two contracts, General Stores Supply Office, Navy, Philadelphia, to the Claymont Div., Colorado Fuel & Iron Corp., Claymont, Del.

PLATES PENDING

445 tons, Cedar Falls penstock replacement, 3412 ft, ⅜ and ⅞ in. plates; Garrett & Schafer Engineering Works, Seattle, low at $234,674 to the Seattle Water Department.

175 tons, hull, hot rolled, uncoated ⅜ in., Purchase Div., Coast Guard, Curtis Bay, Baltimore.

Unstated, bulk storage tank, refueling facilities, etc., Larson Air Base; bids to the U. S. Engineer, Walla Walla, Wash., Mar. 17.

PIPE . . .

CAST IRON PIPE PLACED

68 tons, 6 to 12 in. for Ellensburg, Wash., and 50 tons, 8 to 12 in. for Hillsboro, Oreg., to the U. S. Pipe Foundry Co., Seattle.

CAST IRON PIPE PENDING

200 tons, 6 to 10 in.; bids to Pullman, Wash., Mar. 18.

Unstated, various dimensions; bids to Tacoma and Wenatchee, Wash., Mar. 24; Everett, Wash., Mar. 26.

Iron Ore . . .

Iron Ore Prices, Page 165

Miners employed by Oliver Iron Mining Div., U. S. Steel Corp., on the Minnesota Mesabi iron range last week worked a four-day week. Until demand for steel picks up, they will work alternate four-day and five-day weeks. The curtailed production schedule affects about 90 per cent of the division's 6000 miners in Minnesota, the company said.

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TO FIND THE MAN YOU NEED . . .

Place an advertisement in the "Help Wanted" columns of STEEL's classified pages. Your advertisement will reach the qualified men you need, because STEEL is addressed to highly-trained men in all phases of metalworking

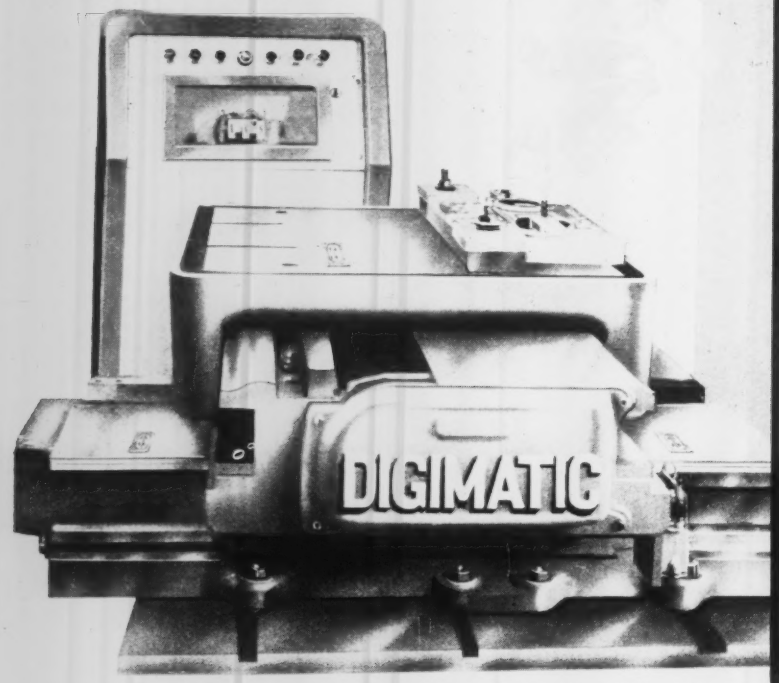
STEEL
The Metalworking Weekly

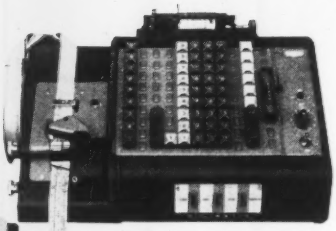
at last!
truly practical
numerical
drilling
control

DIGIMATIC

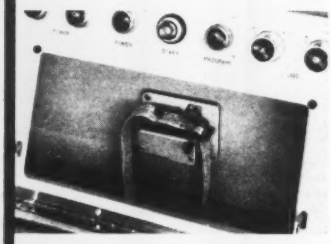
Automatic Control System for Table Positioning

- *ACCURATE*
- *ECONOMICAL*
- *ADAPTS TO EXISTING MACHINES*
- *ENABLES ONE DRILL PRESS TO DO THE WORK OF 5*

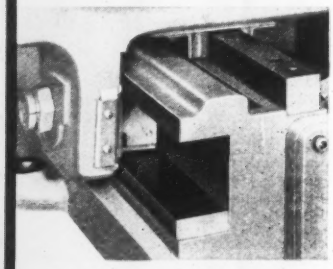




Tape Preparation Unit. Easy-to-learn keyboard operation. No special codes... uses simple decimal coordinates. Provides printed accuracy check.



Control Unit. Compact data storage. One foot of 1-inch tape holds all instructions needed for fifteen 2-axis positions.



Rigidly Built Table. Heavy (1200 lbs.). Replaceable hardened steel ways and rollers.

All-Enclosed Mechanism. Completely sealed against coolant and chips to maintain ±0.0002 inch accuracy.

Write for illustrated brochure giving complete details and specifications.

Now available for immediate installation. AUTOMATIC PATH CONTROL SYSTEMS ALSO AVAILABLE FOR YOUR PRESENT CONTOUR MILLING MACHINES

ECS

ELECTRONIC CONTROL SYSTEMS

DIVISION

STROMBERG-CARLSON COMPANY

A DIVISION OF GENERAL DYNAMICS CORPORATION

2231 South Barrington Avenue, Los Angeles 64, California

FROM WRAPPER TO CORE...

Lee Wilson assures you absolute uniformity

Because Lee Wilson has developed methods for getting the heat to the coil faster, the entire coil reaches annealing temperature more quickly. Inner wrappings of the coil thus get the same amount of heat for the same period of time as the outermost wrappings. This means that every foot of every coil has been subjected to the same condition. What's more, Lee Wilson engineers have developed a simplified remote control that makes sure the heat is directed to the correct areas every moment of the annealing period, without periodic manual furnace adjustment.

Uniformity is necessary to good annealing. If you're concerned with the quality of your product, why not talk with Lee Wilson engineers soon?

Lee Wilson* ENGINEERING COMPANY, INC.

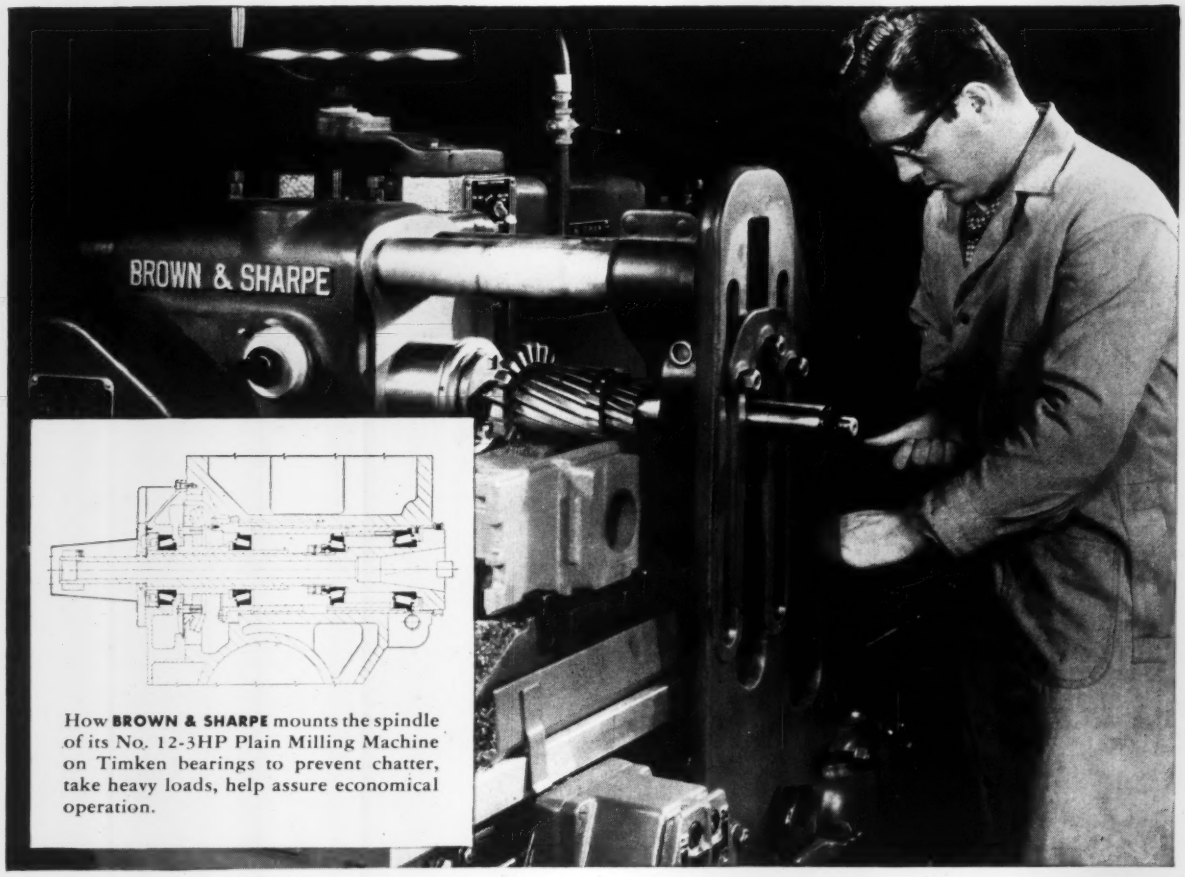
20005 WEST LAKE ROAD • CLEVELAND 16, OHIO

SINGLE-STACK RADIANT TUBE ANNEALING FURNACES

MAKE THE BEST METALS BETTER

* ORIGINATORS AND LEADING PRODUCERS OF SINGLE-STACK RADIANT TUBE FURNACES

25th Lee Wilson ANNIVERSARY ENGINEERING COMPANY INC. CLEVELAND



How **BROWN & SHARPE** mounts the spindle of its No. 12-3HP Plain Milling Machine on Timken bearings to prevent chatter, take heavy loads, help assure economical operation.

Climb mills both ways . . . TIMKEN® bearings prevent chatter in heavy cutting

TO make heavy cuts without chatter, Brown & Sharpe mounts the spindle of its No. 12-3HP Plain Milling Machine on two Timken® tapered roller bearings. For smooth power transmission, they use four Timken bearings in the bevel gear drive to the spindle. And to take climb milling's pulsating loads, two Timken bearings are used in the feed screw drive. Result—production milling is fast and accurate. Here's why.

• SPINDLE RIGIDITY MAINTAINED

Timken bearings hold the spindle in positive alignment. Their tapered design lets them take *both* radial and thrust loads in any combination. And full line contact between rollers and races gives Timken bearings extra load-carrying capacity.

• HEAVY LOADS ABSORBED

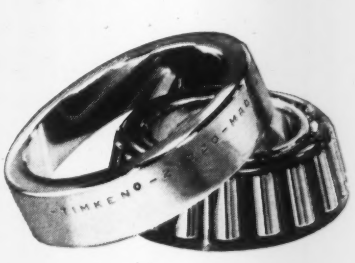
Rollers and races on Timken bearings are case-carburized to have a hard, wear-resistant surface over a tough, shock-resistant core. They take heavy loads and come back for more.

• FRICTION VIRTUALLY ELIMINATED

Timken bearings are geometrically designed to have true rolling motion and are precision-made to live up to their design. Practically friction-free, they last longer and run smoother. And to assure complete quality control, we even make our own electric furnace fine alloy steel. No other American bearing maker does. So for your No. 1 bearing value, always specify bearings trade-marked "TIMKEN". The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

TIMKEN BEARING EQUIPPED

This symbol on a product means its bearings are the best.



TIMKEN

TRADE-MARKS REG. U.S. PAT. OFF.

TAPERED ROLLER BEARINGS ROLL THE LOAD